User Manual

Anybus® RemoteCom

Rev. 1.00:1

HMS Industrial Networks AB

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Preface About This Document

How To Use This Document

This document is intended to provide a good understanding of the functionality shared by the various incarnations of the Anybus RemoteCom. It does however not cover any network specific features, which is instead provided through separate documents, known as Interface Addendums.

The reader of this document is expected to be familiar with industrial networking systems, and communication systems in general.

For more information, documentation etc., please visit the HMS website, 'www.anybus.com'.

Important User Information

The data and illustrations found in this document are not binding. We, HMS Industrial Networks AB, reserve the right to modify our products in line with our policy of continuous product development. The information in this document is subject to change without notice and should not be considered as a commitment by HMS Industrial Networks AB. HMS Industrial Networks AB assumes no responsibility for any errors that may appear in this document.

There are many applications of this product. Those responsible for the use of this device must ensure that all the necessary steps have been taken to verify that the application meets all performance and safety requirements including any applicable laws, regulations, codes, and standards.

Anybus® is a registered trademark of HMS Industrial Networks AB. All other trademarks are the property of their respective holders.

The examples and illustrations in this document are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular implementation, HMS Industrial Networks cannot assume responsibility or liability for actual use based on these examples and illustrations.

Warning:	This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
ESD Note:	This product contains ESD (Electrostatic Discharge) sensitive parts that may be damaged if ESD control procedures are not followed. Static control precautions are required when handling the product. Failure to observe this may cause damage to the product.

Revision List

Revision	Date	Author	Chapter	Description
1.00:1	08-10-22	KEAN	All	First released version

Conventions & Terminology

The following conventions are used throughout this manual:

- Numbered lists provide sequential steps
- Tables provide information, not procedural steps
- The term 'RemoteCom' refers to the Anybus RemoteCom
- Hexadecimal values are written in the format NNNNh, where NNNN is the hexadecimal value.
- All measurements expressed in this document have a tolerance of ±0.25mm unless otherwise stated.
- 16/32 bit values are generally stored in Motorola (big endian) format unless otherwise stated.

Term	Extract	Description
TCP/IP	Transmission Control Protocol/ Internet Protocol	TCP (Transmission Control Protocol) is a set of rules used along with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet.
HTTP	Hyper Text Transfer Protocol	HTTP is a set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the Web.
DHCP	Dynamic Host Configuration Protocol	DHCP is a standard protocol that automates the process of configuring network hosts by allowing hosts to obtain IP addresses and configuration parameters
Gateway		A device that makes it possible to transfer data between networks of different kind, e.g. Modbus/RTU and Modbus/TCP.
Template		Describes a Modbus slave device, as a collection of groups and parameters.
Device		A Modbus slave unit that is connected to the RemoteCom.

This symbol indicates useful instructions on how to use the product.

This symbol indicates important information about the product.

Support

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Chapter 1 About the Anybus RemoteCom

General

The Anybus® RemoteCom module acts as a bridge from Modbus TCP to Modbus RTU, making it possible for a Modbus TCP based controller to connect with Modbus RTU based devices. The Anybus® RemoteCom will also handle alarm management, data-logging as well as providing a web-based user interface for accessing data.

Some RemoteCom features

Graphical user interface that is easy to work with.

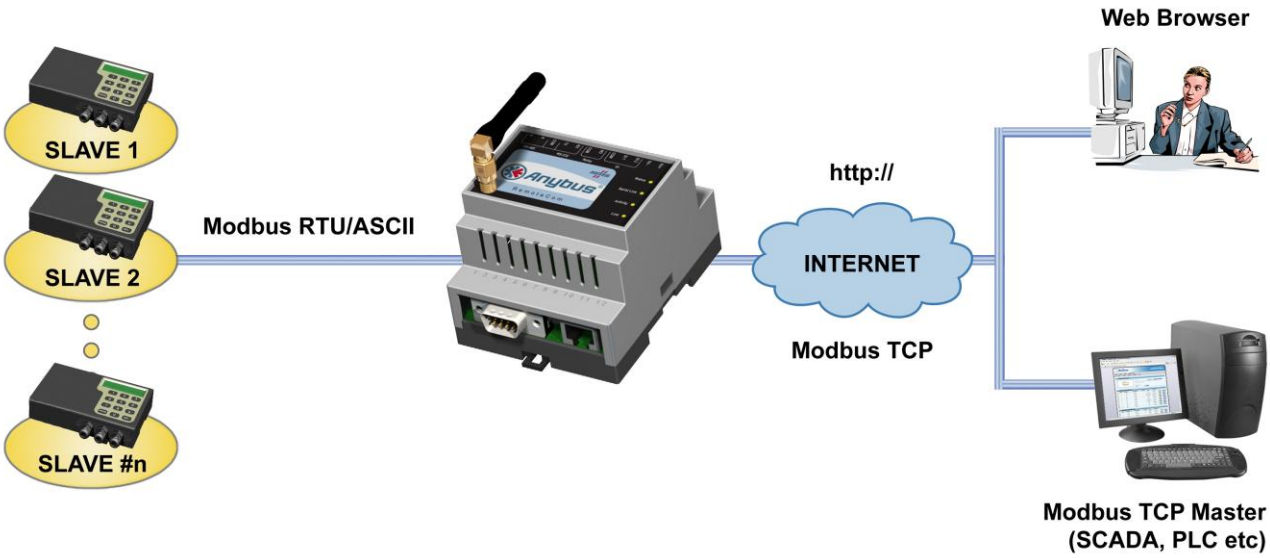
Support for device templates to allow easy and flexible management of configurations.

Advanced modem handling, with support for GSM/GPRS modems as well as analogue (PSTN) modems.

Improved alarm handling, now with alarm history and SNMP support.

Language support.

Support for sending log-files with email or FTP.

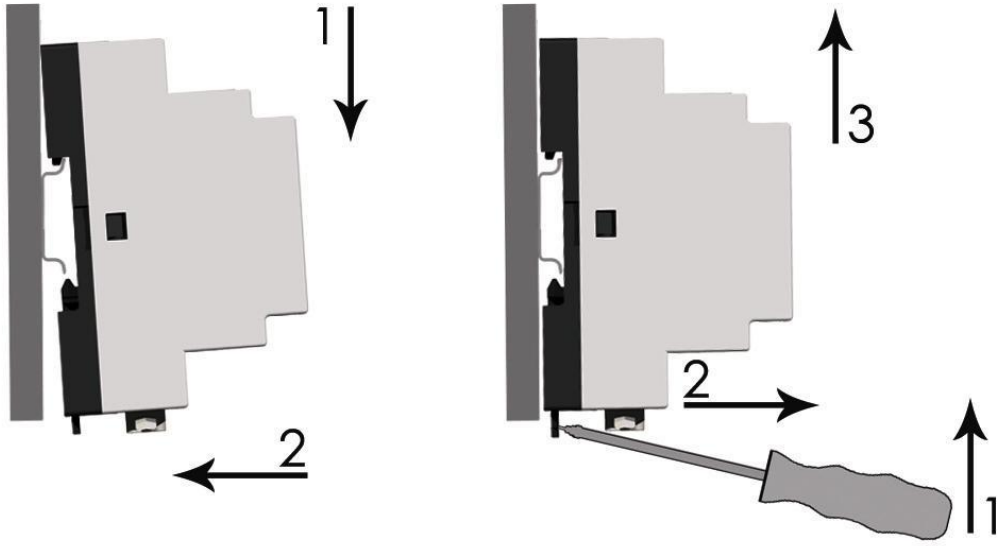


Anybus RemoteCom supports an RS-232 connection through a 9-pole DSUB or RS-485 (screw connection). It also supports 10/100Mbps Ethernet through a standard Ethernet connector (RJ-45). It can be configured via a user-friendly web-interface or by using the Anybus IPconfig utility (available at www.anybus.com).

Mounting

A – Snap on

B – Snap off



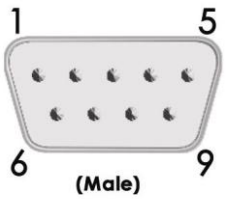
1. Snap the RemoteCom on to the DIN-rail (as described on picture A above).
2. Connect the Ethernet cable to the RJ45 connector.
3. Connect the ModbusRTU network to the DSUB connector (RS-232) or the screw connector (RS-485).
4. Connect the Power Supply and apply power.
5. Now you can start using the Gateway. Use the "Anybus IPconfig Utility" to configure the IP address other network settings. See section Chapter 2 Configure the RemoteCom IP-address on page 2-1 for information.

The default IP address of the RemoteCom is 10.200.1.1
Please change this IP-address to a valid address in your network. Also, make sure not to power up more than one network attached RemoteCom before IP-address is changed or DHCP enabled.

Connectors

ModbusRTU or Modem interface, RS-232

The 9-pole DSUB, male connector on the RemoteCom unit contains an RS-232 interface. This port can be used to connect to any equipment with an RS-232 interface.



Pin number	Function
1	CD (Carrier Detect)
2	Rx (Receive)
3	Tx (Transmit)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)

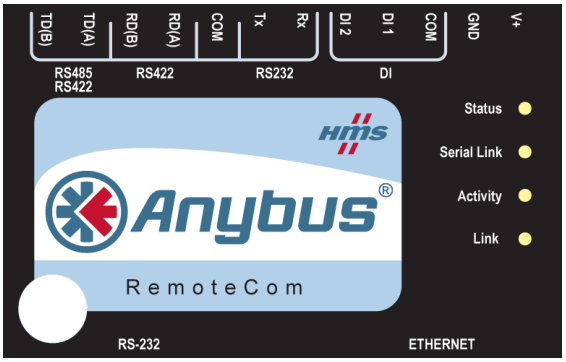
Ethernet interface

The Ethernet interface supports 10/100Mbps, using a standard RJ-45 connector.

Power supply connection / Digital inputs and RS232/RS485 interface

Pin number	Function	Comment
24	Vin+	9-28 VDC (Power requirement 3W)
23	GND	Ground connection
22	Digital input Common	Opto-isolated ground. To read the status of the inputs the internal Gateway registers must be enabled, see section Chapter 5 Internal Registers on page 5-4 for more information
21	Digital input 1+	Opto-isolated input 1, logic High 10-24VDC, logic Low 0-2VDC
20	Digital input 2+	Opto-isolated input 2, logic High 10-24VDC, logic Low 0-2VDC
19	RS232 Receive (Input)	This port could be used to communicate with Modbus devices with the RS-232 port.
18	RS232 Transmit (Output)	
17	COM	Common for the RS-232 and RS-485
16	RS422 Receive (A)	This port is used when connecting equipment with the RS422 interface
15	RS422 Receive (B)	
14	RS485 (A) / RS422 Transmit (A)	This port could be used to connect to any equipment with the RS485 interface or RS422
13	RS485 (B) / RS422 Transmit (B)	

LED Indicators



LED description

Name	Colour	Function
Module Status	OFF	No power
	Green	Module is running in normal mode
	Red	During boot-up
Serial Link Status	Flashing Green	Serial Packet receive
	Flashing Red	Serial Packet transmit
	Orange	During boot-up
Ethernet Activity	Flashing Green	Ethernet Packet received
Link	OFF	No Ethernet Link detected
	Green	Ethernet network detected, 10Mbps
	Orange	Ethernet network detected, 100Mbps

Chapter 2 Getting started

Configure the RemoteCom IP-address

About the RemoteCom Config Tool

The RemoteCom Config Tool is a PC-based configuration utility to set TCP/IP network settings in the RemoteCom. This utility has the ability to scan the Ethernet network for connected RemoteCom devices and let the user set the IP-address, subnet mask, gateway, DNS and hostname for each unit.

Installation

System Requirements

- Pentium 133 MHz or higher
- 5 Mb of free space on the hard drive
- Win 2000/XP/Vista
- Network Interface Card (Ethernet)

Installation Procedure

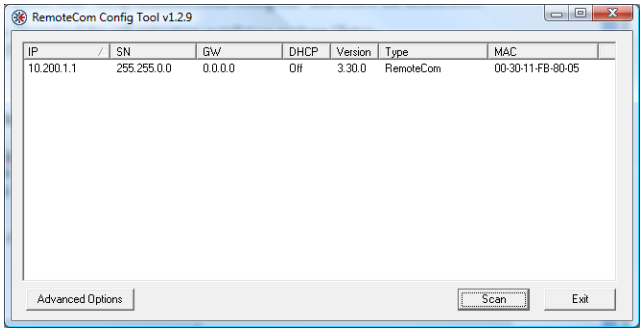
There are two methods to install the **RemoteCom Config Tool**; either download it from the Anybus website or use the installation CD-ROM.

- Using the CD-ROM: Run "Setup-RemoteComConfigTool.exe" and follow the instructions.
- From website: Download the self-extracting installation package "Setup-RemoteComConfigTool.exe" from www.anybus.com and run it.

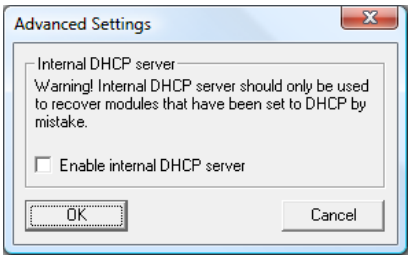
Scanning for connected devices

When the RemoteCom Config Tool is started, it will scan the Ethernet network for RemoteCom devices. All detected devices will be presented in a list in the main window.

If you want to force a new scan for devices, you can press the "**Scan**" button.



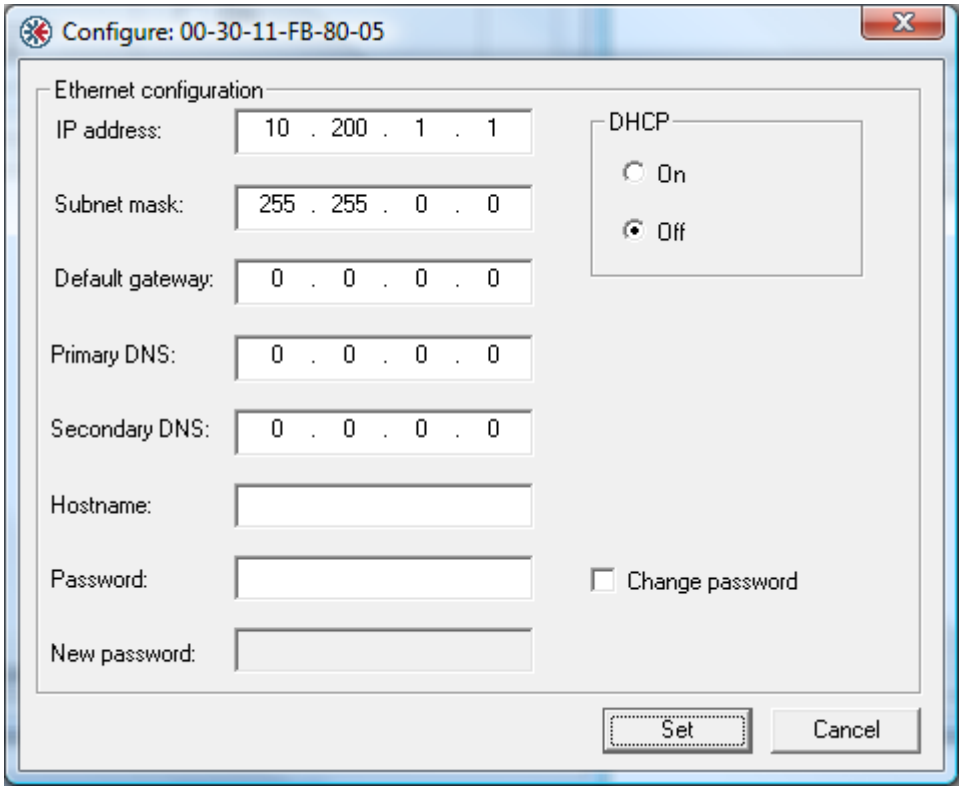
If you by mistake enable the DHCP in the RemoteCom without having a DHCP server on the network, you could press the Advanced Options and activate a DHCP server that could assign an IP address in the RemoteCom.


Advanced Settings
Internal DHCP server
Warning! Internal DHCP server should only be used to recover modules that have been set to DHCP by mistake.
Enable internal DHCP server
OK
Cancel

Changing IP settings

To change the IP settings on a detected device, double-click on the device you want to configure in the list of devices. This will open up a dialog where you can enter the desired IP configuration.

To obtain the necessary information about IP address, subnet mask etc. please contact your network administrator.



Field	Contents
IP Address	The IP address of the RemoteCom
Subnet mask	Mask network
Default gateway	The default gateway in the network
Primary DNS	The primary Domain Name Server
Secondary DNS	The secondary Domain Name Server (optional)
Hostname	Here you could enter a hostname for your device
Password	The default password for authentication of the new setting is 'admin'
New Password	To change the password, first check the 'Change password' checkbox
DHCP	Setting: Meaning: On Use server-assisted IP settings Off Use the settings described below **Note:** Do not select the DHCP option unless you have a DHCP server available on the network
Change Password	Check this checkbox to enable the 'New password'-field

(Pressing "**Set**" will cause the RemoteCom device to reboot and apply the new settings.)

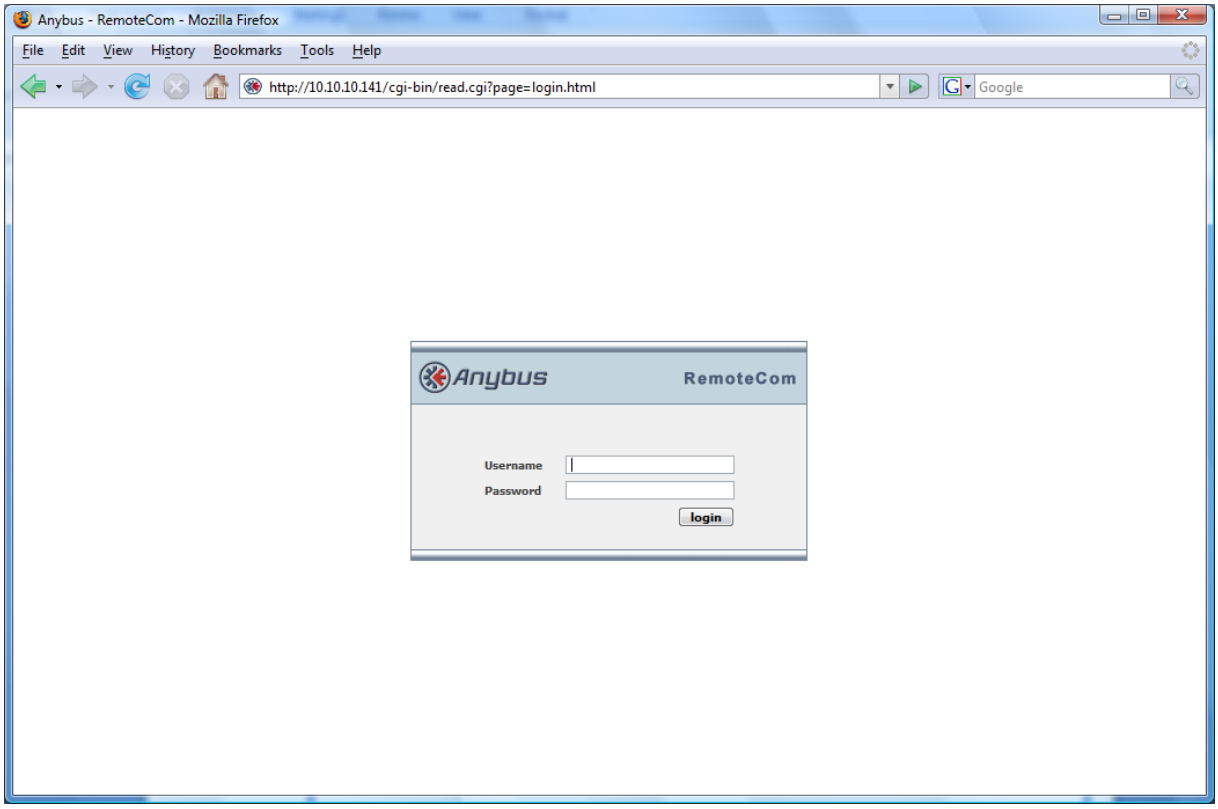
You can test the new settings by opening a web-browser and enter the IP you assigned to the device. If you selected DHCP and want to know what IP your device have been assigned, you can do a new scan with the Anybus IPconfig utility to view the new network configuration.

Log in

Open a web browser (Internet Explorer for example) and enter the IP address you have set on the RemoteCom unit with the Anybus IPconfig utility. For example, if you entered the address 10.10.10.141 then you should enter the text below in the address field of the browser and press enter.

http://10.10.10.141

Now you should see the login screen:



To be able to configure the Gateway you should enter "**admin**" in the user-name box.
The default password is "**admin**".

You can later change the default password to something else (recommended).
This will be described in section Chapter 5 on page 5-1.

If you have problems to log in and you are sure that your password is correct, make sure that "Caps Lock" is not enabled on your keyboard.

Chapter 3 Web-page overview

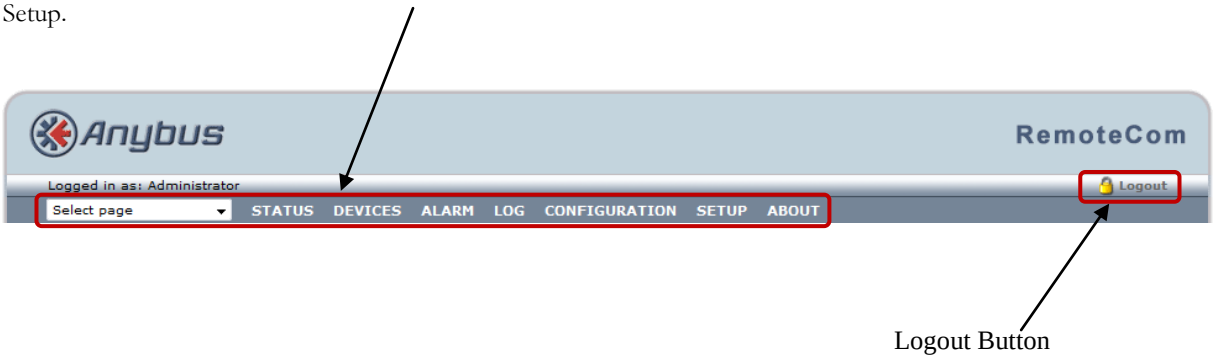
Browser requirements

The web-pages are optimized for Internet Explorer and Mozilla Firefox. Other browsers can work as well, but the web-pages might appear differently. **The browser must be JAVA enabled, to use pages with JAVA content (like the graph page).** If it's not, please visit www.java.com to download a JAVA-plugin for your browser.

The picture below shows the welcome screen which is shown when you first log into the module.

Menu overview

To navigate on the web-pages, use the menu items available: Select Page(**Go**), Status, Alarm, Log, Configuration and Setup.



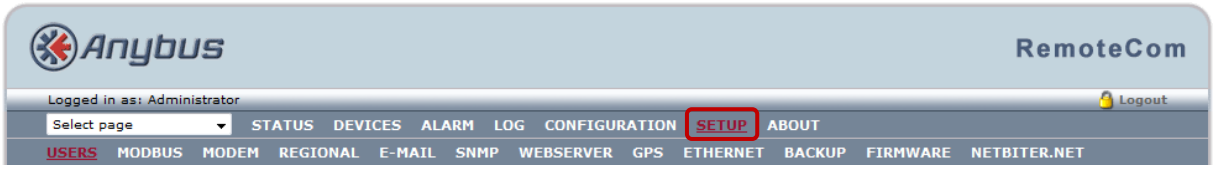
Configuration menu

When you choose the **Configuration** menu, a sub menu will appear:

Sub menu	Description
Templates	Used to create, edit and backup templates for your devices
Devices	Define the devices which you connect to the RemoteCom
Pages	Create and edit the structure of the presentation web-pages and also select parameters to be presented
Alarm	Used to enable/disable SMS/Email/SNMP alarms, and also to create and modify alarm parameters
Log	Configure the behavior of the log-file, and also create/modify log-parameters
Bindings	Enable and configure automatic parameter “copying” from one Modbus slave to another at a configurable interval

Setup menu

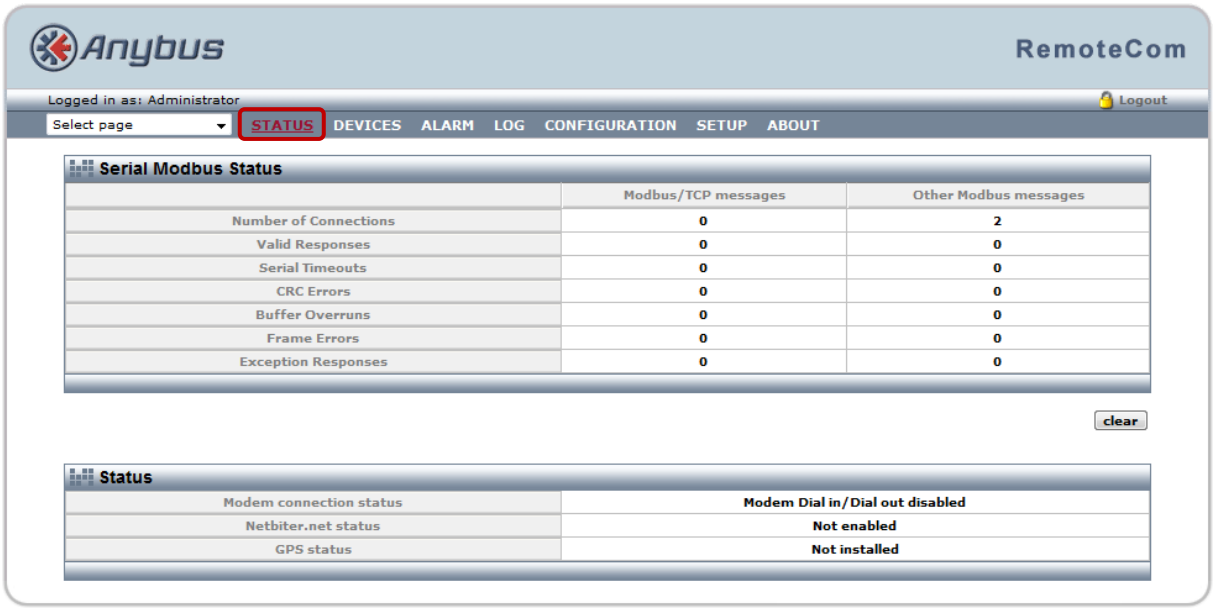
When you choose the **Setup** menu, a sub menu will appear:


Anybus
RemoteCom
Logged in as: Administrator
Logout
Select page
STATUS DEVICES ALARM LOG CONFIGURATION SETUP ABOUT
USERS MODBUS MODEM REGIONAL E-MAIL SNMP WEBSERVER GPS ETHERNET BACKUP FIRMWARE NETBITER.NET

Sub menu	Description
Users	Create and modify users, you also specify phone number and e-mail for alarms here
Modbus	ModbusRTU and ModbusTCP configuration
Modem	Modem configurations (Analogue, GSM, GPRS, dial-up, dial-in)
Regional	Configure date/time format, NTP server and generic module information
E-Mail	Configures all that is needed to send emails from the RemoteCom
SNMP	Configure SNMP trap properties
Webserver	Define which port the RemoteCom web-server should use
GPS	Setup a connected GPS Receiver
Ethernet	TCP/IP configurations, like IP-address, DHCP, DNS etc
Backup	Backup/restore all settings, and also do a factory reset of the RemoteCom module
Firmware	Used to download new firmware to the module
NetBiter.net	Enable the RemoteCom to connect to NetBiter.net

Status

This page shows some status information about the Modbus interface. The Status screen is split into two columns, “Modbus/TCP messages” and “Other Modbus messages”. The Modbus/TCP messages field shows information about requests that originate from a master attached to the gateway, and Other Modbus messages field shows information about requests that originate from either internal applications (Log/Alarm) or WebPages.



Serial Modbus Status

Field	Comments
Number of connections	Indicates the number of open connections to a Modbus TCP master. Internal queries indicate number of pending queries from WebPages + the internal connection from (Alarm/Log) application.
Valid Responses	Counts valid responses from the Modbus/RTU slaves.
Serial Timeouts	The number of time-outs from attached slaves.
CRC Errors	The number of CRC errors on incoming Modbus/RTU responses.
Buffer Overruns	If an incoming Modbus/RTU response is larger than 300 bytes, this will cause the input buffer to overflow.
Frame Errors	If an incoming Modbus/RTU response has incorrect length or some other fault in the frame, this will cause a Frame Error.
Exception Responses	Counts all exception responses from the connected Modbus/RTU slaves.

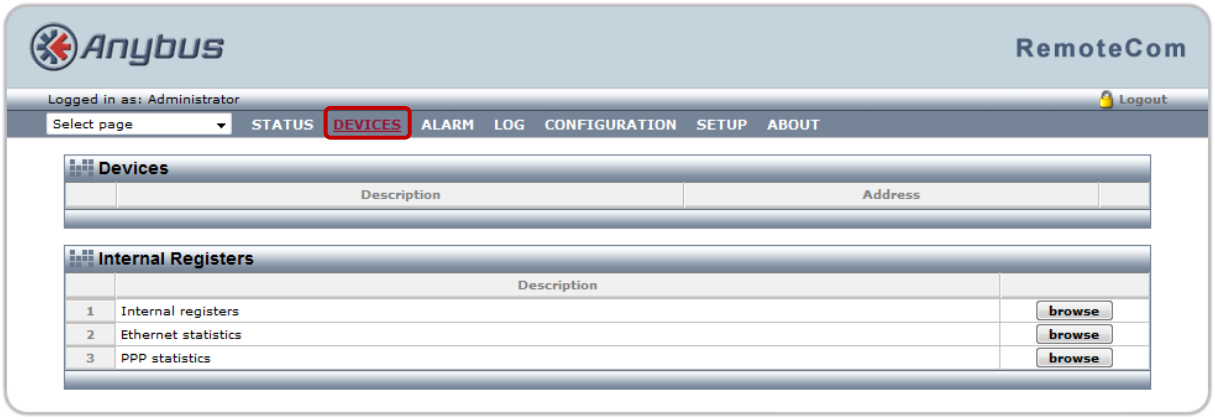
Status

Field	Comments
Modem connection status	Displays the current status of the modem connection.
NetBiter.net status	Displays the current status of a connection to NetBiter.net (if enabled)
GPS status	Displays the current status of a GPS (if connected)

Devices

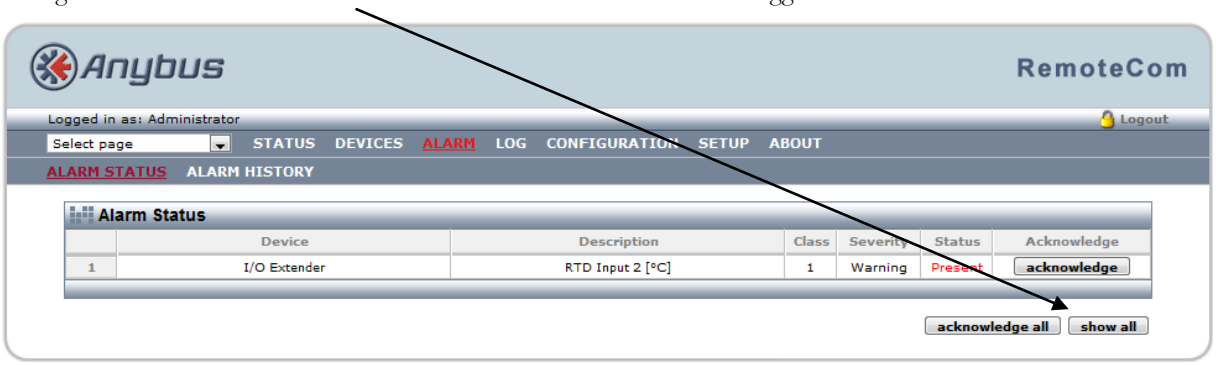
The device menu item is a browser that can browse all parameters in a template for a device and show current values. The page will show a list of all available Modbus devices. A tree with all groups will be shown when expanding the tree. Open a group by clicking on the group name to see values for each parameter.

Internal Registers and statistics are also available to browse.



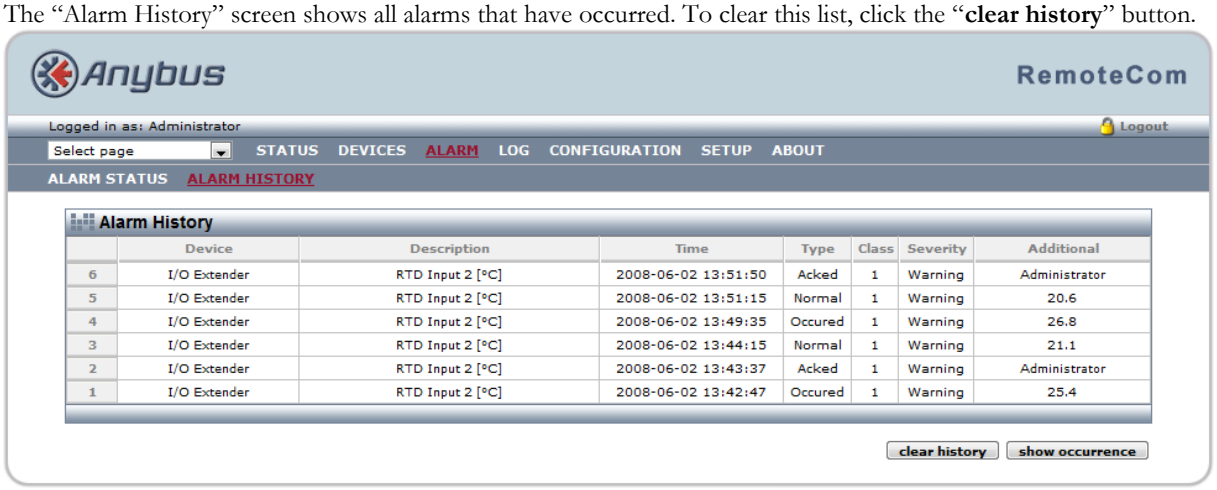
Alarm

The Alarm page shows all active and unacknowledged alarms. It is also possible to select to view the status of all configured alarms. Use the button in the lower left area of the screen to toggle between the two modes.



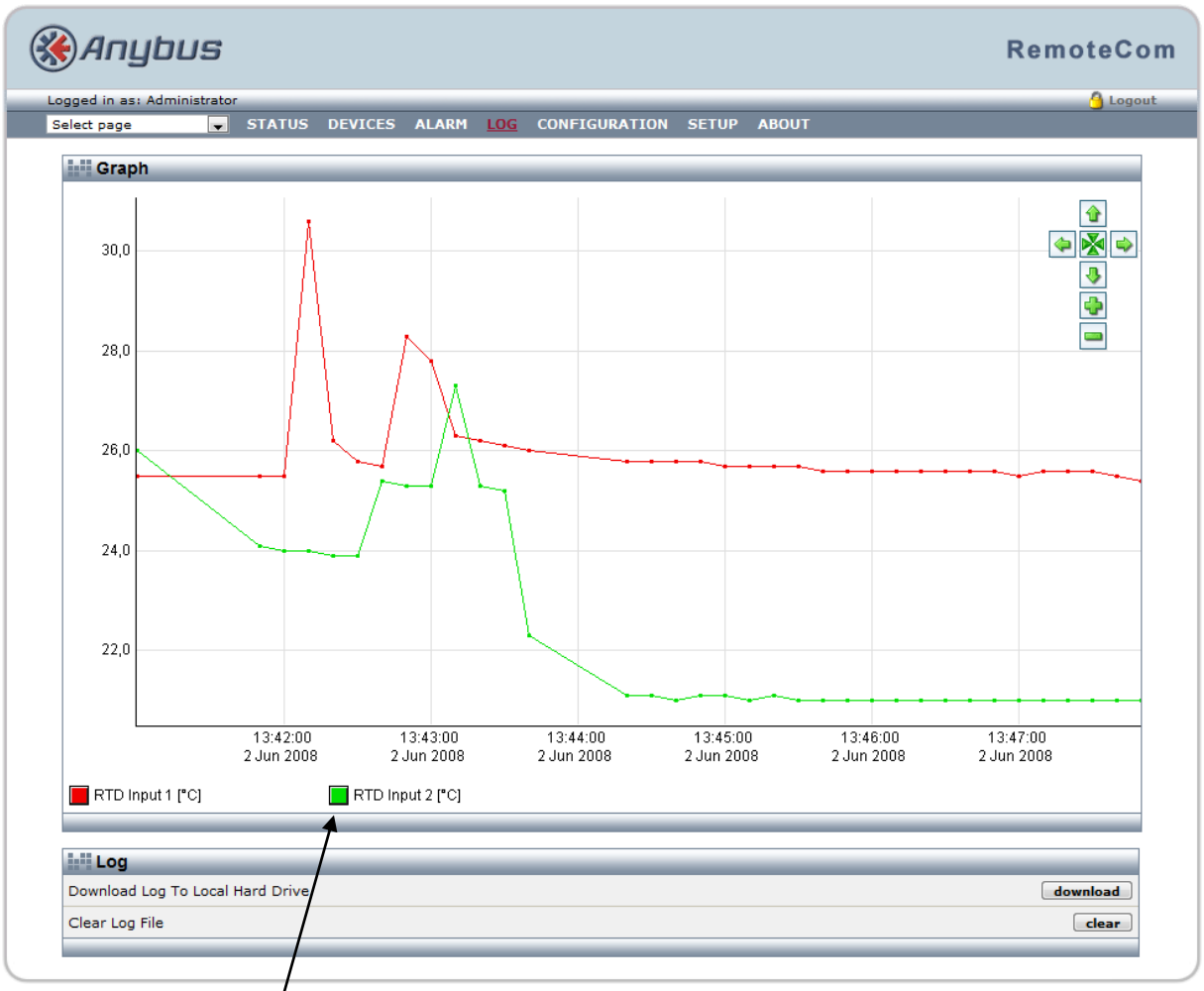
Alarm history

The "Alarm History" screen shows all alarms that have occurred. To clear this list, click the "**clear history**" button.


Anybus
RemoteCom
Logged in as: Administrator
Logout
Select page
STATUS DEVICES ALARM LOG CONFIGURATION SETUP ABOUT
ALARM STATUS ALARM HISTORY
Alarm History
Device Description Time Type Class Severity Additional
6 I/O Extender RTD Input 2 [°C] 2008-06-02 13:51:50 Acked 1 Warning Administrator
5 I/O Extender RTD Input 2 [°C] 2008-06-02 13:51:15 Normal 1 Warning 20.6
4 I/O Extender RTD Input 2 [°C] 2008-06-02 13:49:35 Occured 1 Warning 26.8
3 I/O Extender RTD Input 2 [°C] 2008-06-02 13:44:15 Normal 1 Warning 21.1
2 I/O Extender RTD Input 2 [°C] 2008-06-02 13:43:37 Acked 1 Warning Administrator
1 I/O Extender RTD Input 2 [°C] 2008-06-02 13:42:47 Occured 1 Warning 25.4
clear history show occurrence

Log

From this page it's possible to download the log file from the RemoteCom (if logging has been enabled). Simply click the "**download**" button to download/view the file, or click the "**clear**" button to remove all data from the log-file. To view the log-file as a graph, make sure that JAVA is installed on your computer.



The graph will show all parameters in the log-file, but in the graph it's possible to select which parameters to show (by clicking on the square next to the parameter name).The three first log points will be displayed in the graph. To show a log-point just click the square in front of the parameter name. To make it disappear from the view click the square again.

At the top right corner there navigation buttons:

Scroll graph up

Scroll graph left

Scroll graph right

Scroll graph down

Back to starting view

Zoom in

Zoom out

By using a left click on the mouse, keep the button down and release it at the diagonal corner of a box the graph will zoom to that size.

By right clicking and keeping the button down the graph can be scrolled by moving the mouse.

Chapter 4 Module Configuration

An important concept for the RemoteCom is the usage of templates. This allows the user to define templates for different products and configurations, and then easily re-use and distribute them. A template contains properties for available parameters in a device of a certain type. These properties includes: Parameter Names, Modbus register types and addresses, data scaling and presentation.

Work-flow

Follow these steps to get your RemoteCom operational:

1 – Do all generic Setup, like assigning an IP-address (Setup/Ethernet), add/modify users (Setup/Users), configure the Modbus interface (Setup/Modbus) and set date/time (Setup/Regional).

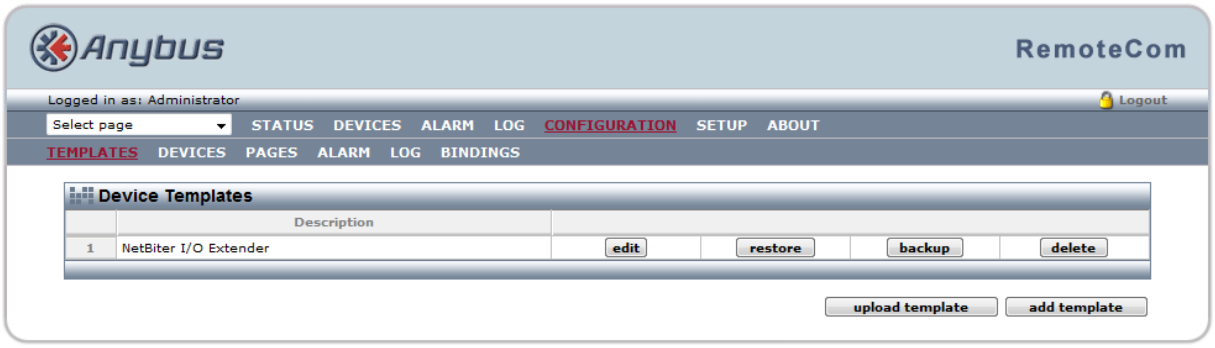
2 – Create a template (Configuration/Templates).
A Template consists of one or several groups, and each group is a collection of Modbus Parameters.

3 – Define your Devices (Configuration/Devices).
Device is simply a Modbus slave, with a unique Modbus address. For each Device, you apply a Template.

4 – Create your Application! Now you can define your web-pages, alarms, log entries and bindings.

Create a template

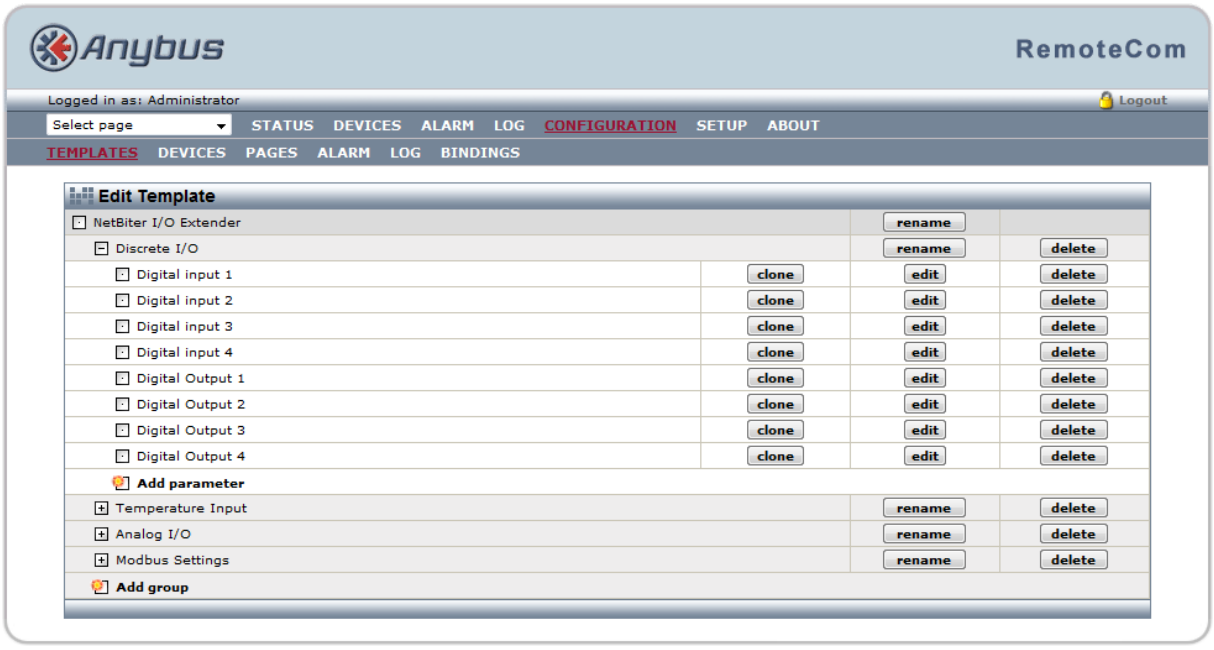
Clicking on the "**Configuration**" and then "**Templates**" link will bring up the following screen:



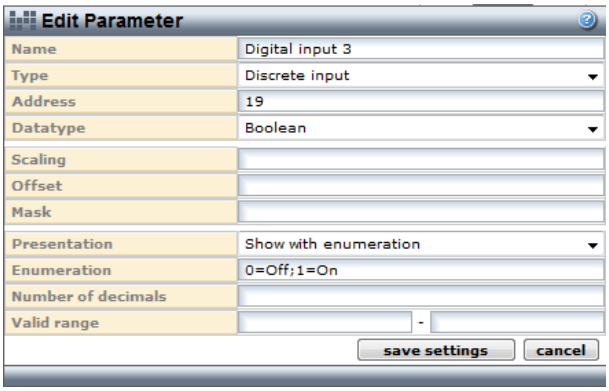
To create a template, click the "**add template**" button. Enter the name of the template in the window that pops up. Click "**edit**" to make it possible to add new groups (a collection of parameters) and new parameters, or edit an existing template. From this page it is possible to backup, restore (update templates) and delete templates.

To upload a template click the "**upload template**" button to upload a template. There will be a window appearing waiting for the user to browse to the template file, and click "**upload template**" when the file is found.

You must always add a Group, before you can add a Parameter.

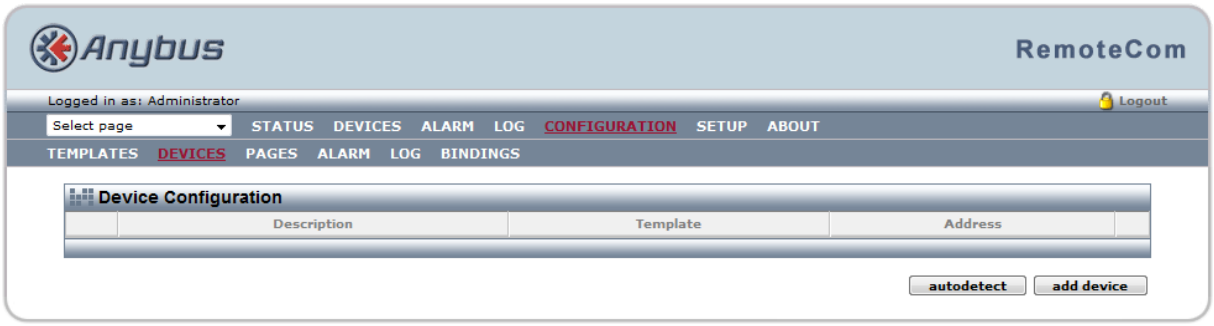


When you have created a Group, and at least one parameter, it's possible to edit the Parameter by clicking the "**edit**" button. This will bring up the following screen (Edit Parameter):

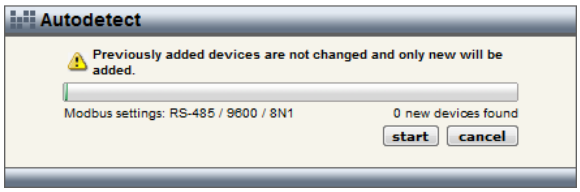


Click on the "?" to view the online help at the upper right corner of the Edit Parameter window

Device configuration



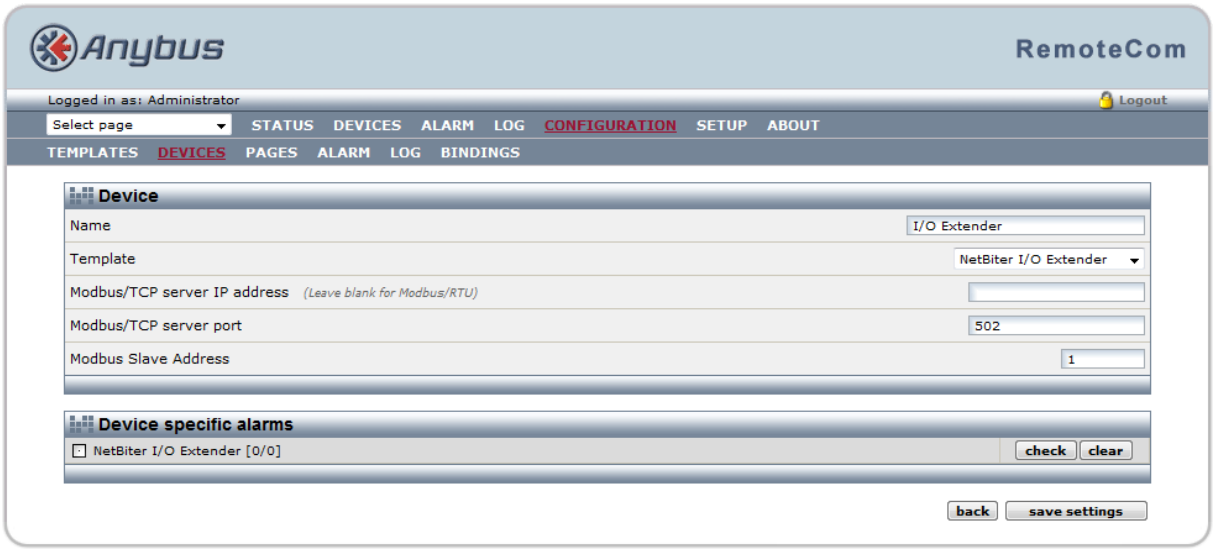
On the Device Configuration page, you define which Modbus slaves are attached to the RemoteCom.


Autodetect
Previously added devices are not changed and only new will be added.
Modbus settings: RS-485 / 9600 / 8N1
0 new devices found
start
cancel

Autodetect can be used to add devices. Every Modbus address will be scanned with the Modbus communication interface settings. Every Modbus device connected has to have a unique address set before starting the auto detection. The scanning will scan one Modbus address after another, which could take some time to perform. The scanning will be displayed in the progress bar.

If the templates uploaded support identification for Modbus devices the correct template will be assigned. If not the devices will be added and the user has to assigned a template manually.

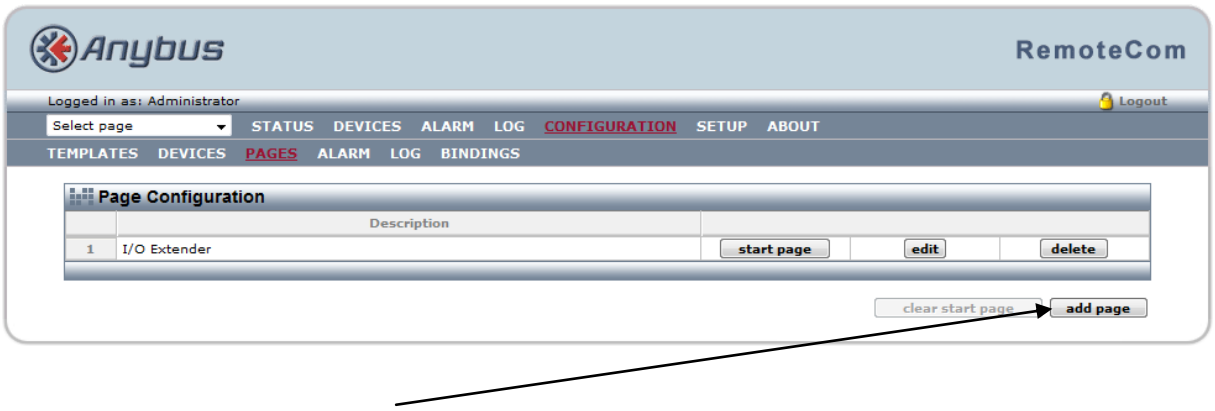
To manually add a device, click the "**add device**" button. This will bring up the following screen:



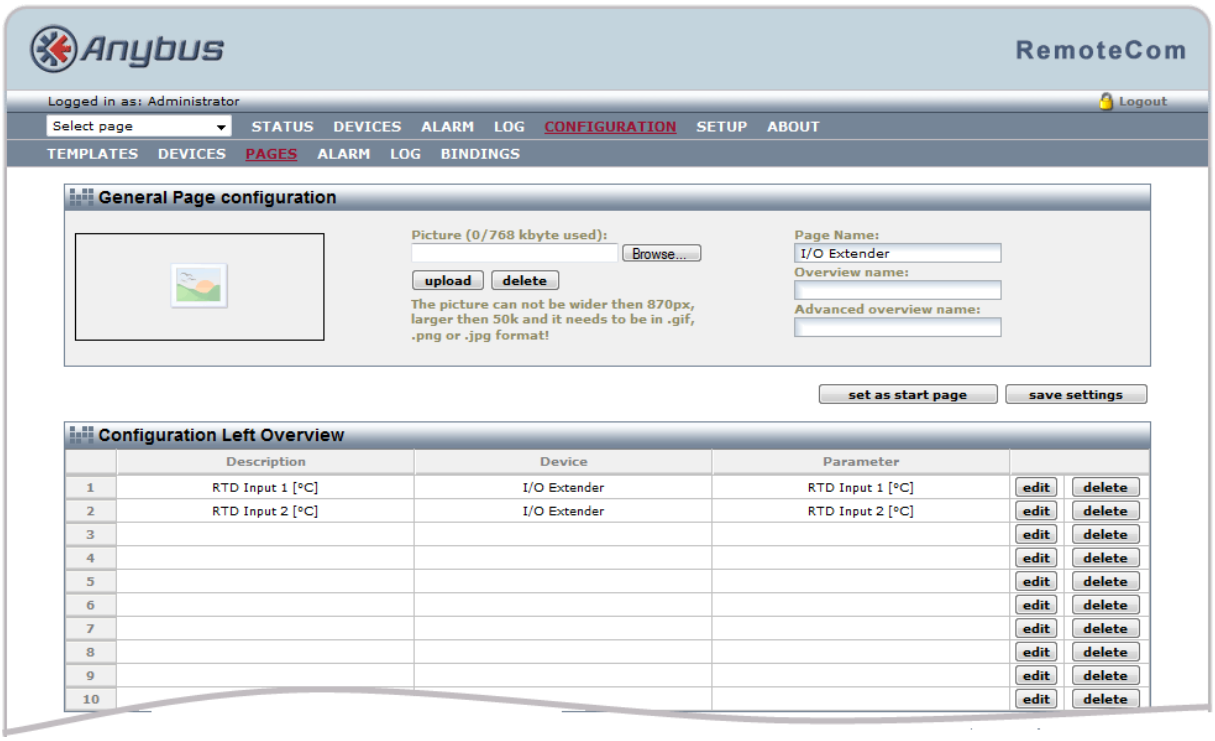
Field	Comments
Name	A description of the device.
Template	Defines which template that should be associated with this device.
Modbus/TCP server IP address	If using Modbus/TCP the IP address should be entered here. When using Modbus/RTU it should be left blank.
Modbus/TCP server port	The port that is used for the Modbus/TCP communication.
Modbus slave address	Defines the Modbus address for this device.

The next step is to create your RemoteCom application, by defining the look of the web-pages and which alarms and log-parameters that should be available.

Pages

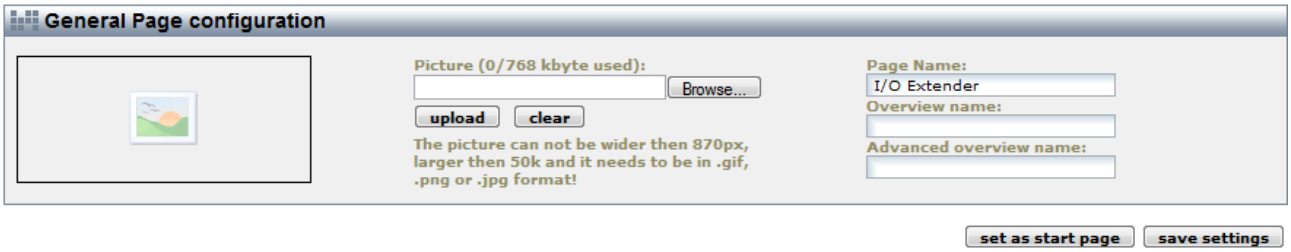


To create a new page, click the "**add page**" button. This will bring up the General Page Configuration:



On this page all page properties can be configured. A maximum of 20 Modbus parameters can be used on each page.

Next step is to define where to display the parameters. Simply click the "**edit**" button on the position you want to work with.



Picture

This option lets you choose a picture to be presented on the page. The picture must not be more than **870 pixels wide** and must be in gif, jpg or png-format. The picture will be sent to the device when you press the "**Upload**" button. To remove a picture from the device, press the "**Clear**" button.

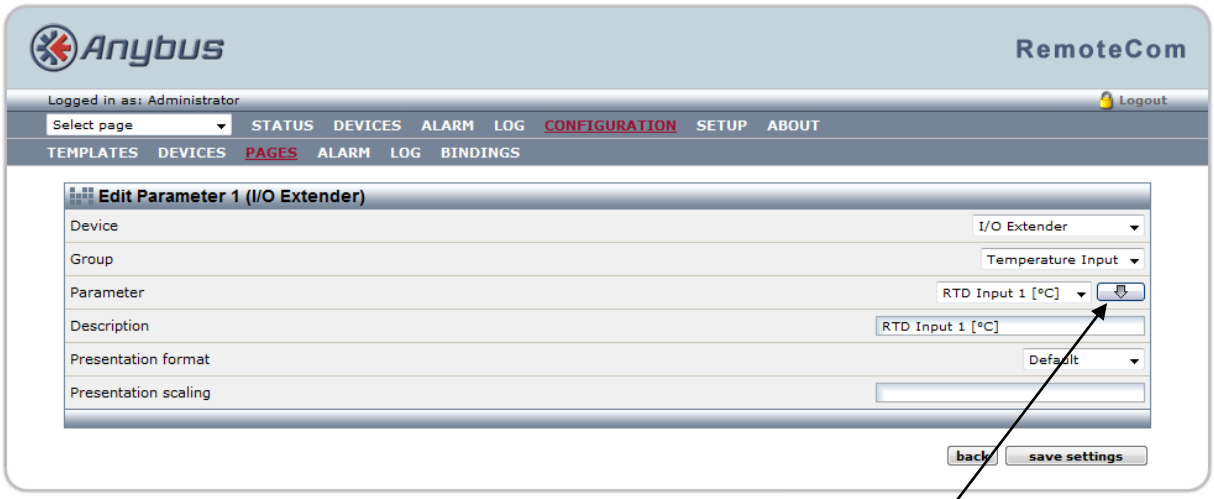
There are 768kB available for pictures. On the General Page configuration section you can see how much space remains.

Page name

This field can be used to give the page a more descriptive name. Click the "**set as start page**" button if this page should be the first page to be presented when logging into the module.

It's also possible to change name on the Page menu (default "Overview" and "Advanced Overview").

Adding parameters to web-page



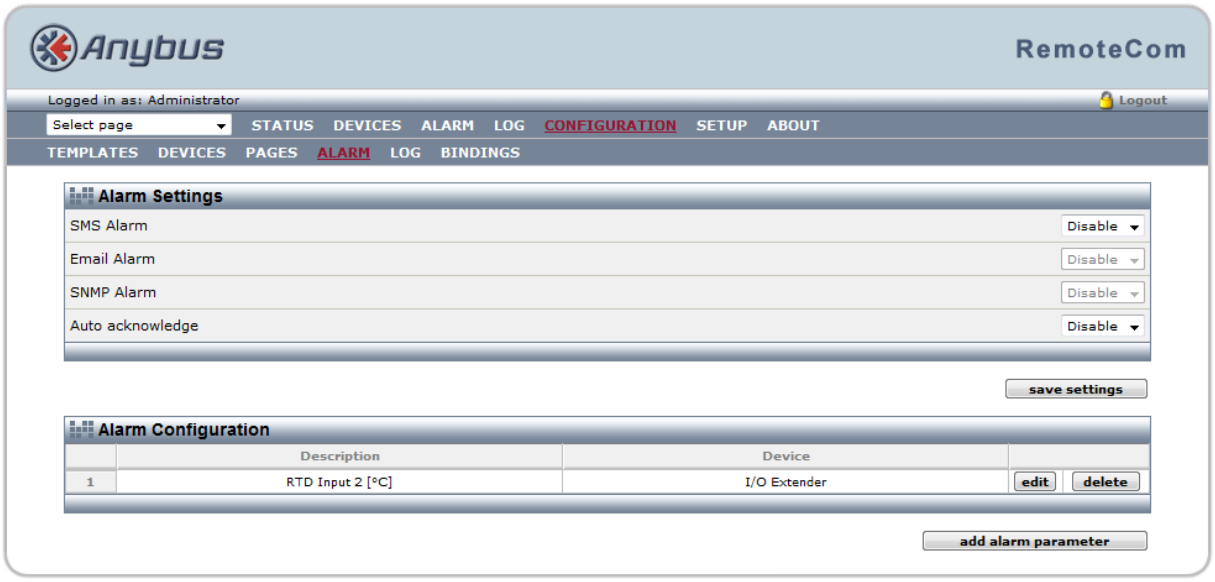
Now select the Device, Group and Parameter and enter a description for this parameter, and finish by clicking the "**save settings**" button. To check that everything is OK, go to the "Select page" in the menu, select the page you have been working with and hit the "**Go**" button.

Field	Comments
Device	Select from what device you will fetch the parameter.
Group	Select the signal group which contains the parameter.
Parameter	Select the specific parameter to display on the page. Pressing the down-arrow to the right copies the parameter name to the description.
Description	Enter a description for the parameter to be used on the page.
Presentation format	You could select a different presentation for a value on the presentation pages. Default — Value is presented as it is configured in the Device template. Hexadecimal — Value is presented in hexadecimal form. Binary — Value is presented in binary form.
Presentation scaling	You can add an additional scaling on the value before it is presented on the web-page. The value will be divided by the scale value before presented on the web-page. It will be multiplied with the scale value before value is written to a slave device. It is normally better to use the scaling in the Device template because that will also include logging and alarm.

Alarm configuration

The Anybus RemoteCom can send alarm messages with email, SMS or SNMP (traps).
(SMS alarms require an external GSM modem). The alarm functionality can be enabled/disabled on the Alarm configuration page.

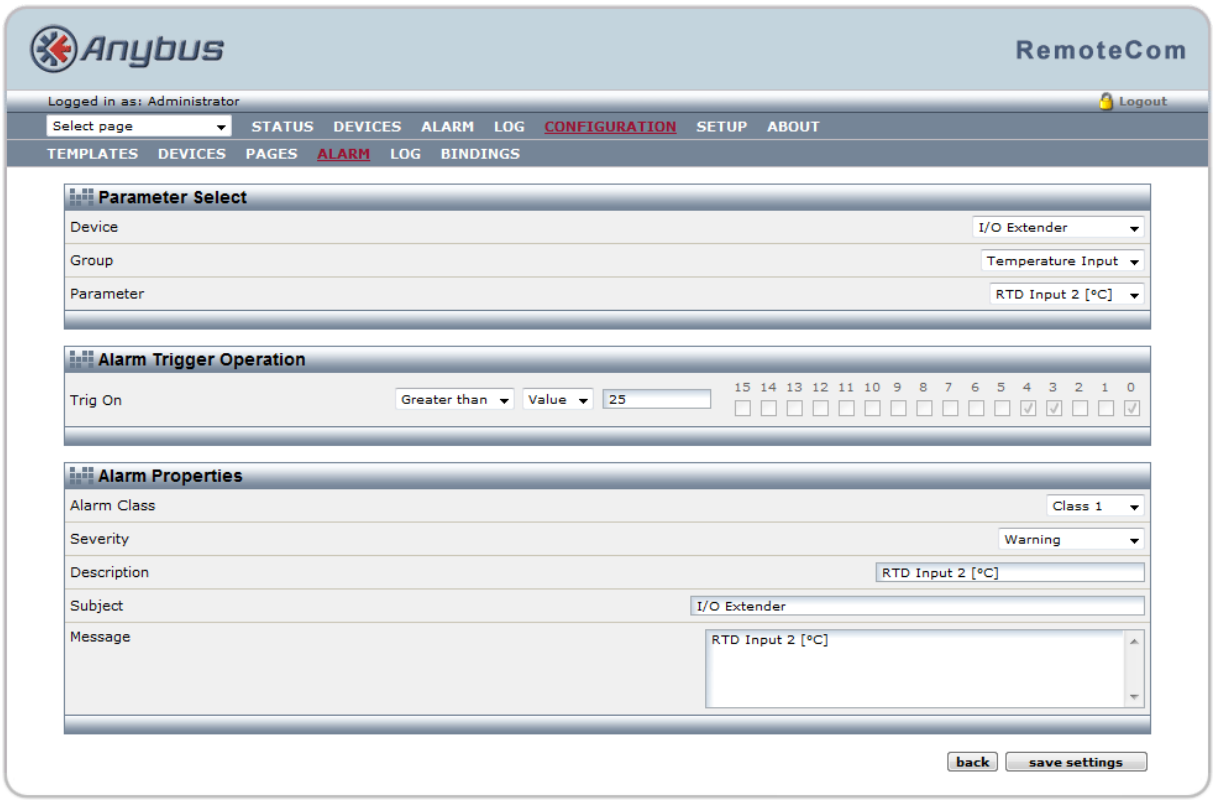
A maximum of 64 alarm parameters can be configured.



Field	Comments
SMS Alarm	Enable/Disable SMS Alarms. Requires an external GSM modem.
Email Alarm	Enable/Disable Email Alarms.
SNMP Alarm	Enable/Disable SNMP Alarms.
Auto acknowledge	Enable/Disable automatic acknowledge of alarms, if disabled the RemoteCom will not send another alarm until it has been manually acknowledged.

Defining alarms

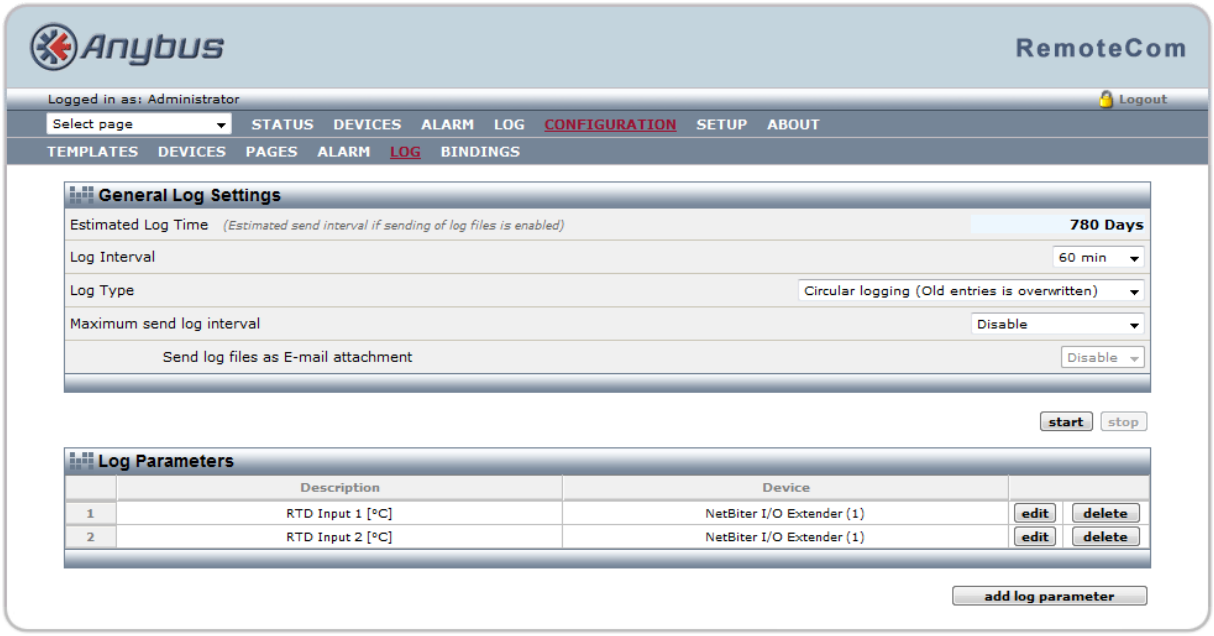
To add an alarm point, click on the "**edit**" button in the Alarm Configuration list. This will bring you to the following screen. Here you need to select which parameter to use, and define the trigger operation that will activate the alarm. You also need to define some properties like alarm class (1-10), and what strings should be in the subject and message field of SMS/Email alarms.



Field	Comments
Device	Select the device with the parameter to monitor.
Group	Select the group with the parameter to monitor.
Parameter	Select the parameter to monitor for changes.
Trig On	this configures the trig condition for the alarm parameter. It's possible to trigger on a Value ('Higher than', 'Lower than', 'Equal to', 'Not Equal to', 'Change of Value') or on a bit-field ('Any bit', 'Neither bit', 'All bits'). The option 'No response' is used to send an alarm if there is no response from the module.
Alarm class	Can be used to set different priorities on the alarm (class 1-10). The Alarm Class has to be set for each user that alarm message will be sent to. This is done at the configuration page for the user.
Severity	The severity of the alarm. Warning Minor Major Critical Indeterminate The alarm could also have the severity Cleared, that cannot be set but will be sent via SNMP when the alarm is in normal state. Every alarm will be sent as a SNMP trap message.
Description	The text that is displayed in the alarm views and sent via SNMP.
Subject	Defines the text to be shown as Subject in the email/SMS.
Message	The body of the alarm message.

Log configuration

Anybus RemoteCom can be used to log Modbus registers. All data is stored in a CSV-file that can be uploaded to a computer for further analysis in e.g. Excel. A maximum of 64 parameters can be configured.



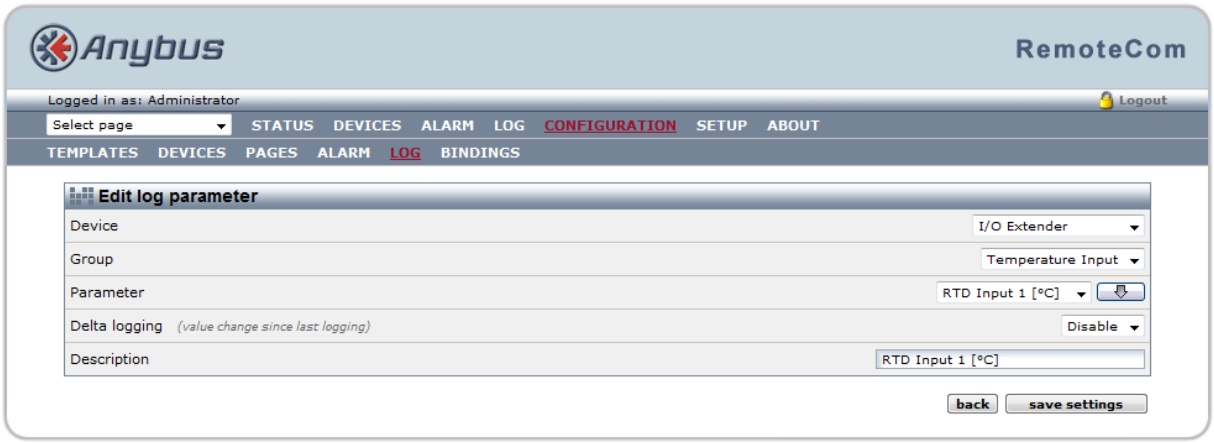
To start logging, click the "**start**" button.

Field	Comments
Estimated Log Time	Estimated time to fill the log-file.
Log Interval	Defines the sample interval.
Log type	Choose whether to stop logging when the log has reached its maximum, or to overwrite old values (circular log).
Maximum send log interval	Enable this if you want to send the log-files periodically with e-mail or to NetBiter.net. You can choose to send the log at least every hour, every day (will be sent around midnight) or every week (Sunday around midnight). You will also need to activate this function on each user that should receive the log-files.
Send log files as E-mail attachment	Enable this if you want to send the log-files periodically with email with the Send log interval set above. Make sure that each user that should get the logs by email has this function activated for the user. This is configured at Setup/User and edit settings for that user, see section Chapter 5 on page 5-1.

The log-file that is stored in the NetBiter will contain historical data for a maximum of two periods as defined in the "Send log files with E-mail" property. I.e. if you set this to every day, the log-file in the NetBiter will keep a maximum of two days historical.

See also **Setup/Regional** settings to make sure you have the correct settings for list separator and decimal symbol, see section Chapter 5 on page 5-7.

To add a log-point, click the "**add log parameter**" button, and then the "**edit**" button. This will bring you to the "Edit Log Entry" page.

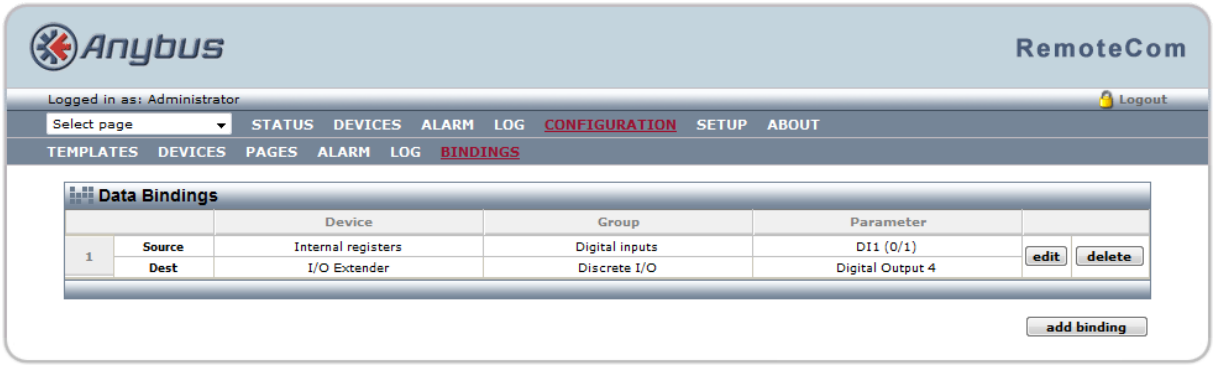


Now you can select the Device/Group/Parameter you want to log. To finish, click the "**save settings**" button.

Field	Comments
Device	Select from what device you will fetch the parameter.
Group	Select the signal group which contains the parameter.
Parameter	Select the specific parameter to log. Pressing the down-arrow to the right copies the parameter name to the description.
Delta logging	Stores the difference between the two last samples.
Description	Enter a description for the parameter to be used on the log page.

Bindings

Bindings are a feature that allows you to "copy" parameters from one Modbus device to another. To add a binding, click the "**add binding**" button.



On the "Add Data Binding" screen you choose the Source and Destination parameter, and the interval for the copying of data.

Field	Comments
Source	Define the source of the Data Binding
Device	Select from what device you will fetch the parameter.
Group	Select the signal group which contains the parameter.
Parameter	Select the specific parameter to copy to the destination.
Destination	Define the destination of the Data Binding
Device	Select which device you will send the parameter to.
Group	Select the signal group which contains the parameter.
Parameter	Select the specific parameter to write from the source.
Copy interval	Specify how often the parameters is copied

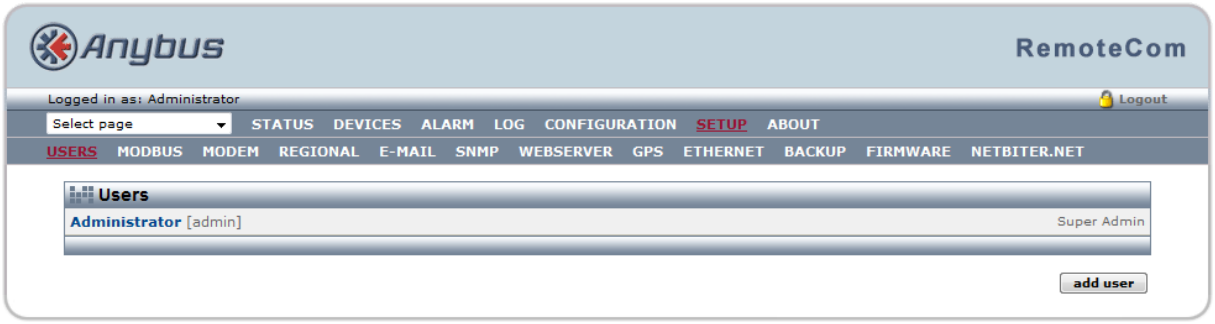
Chapter 5 Module Setup

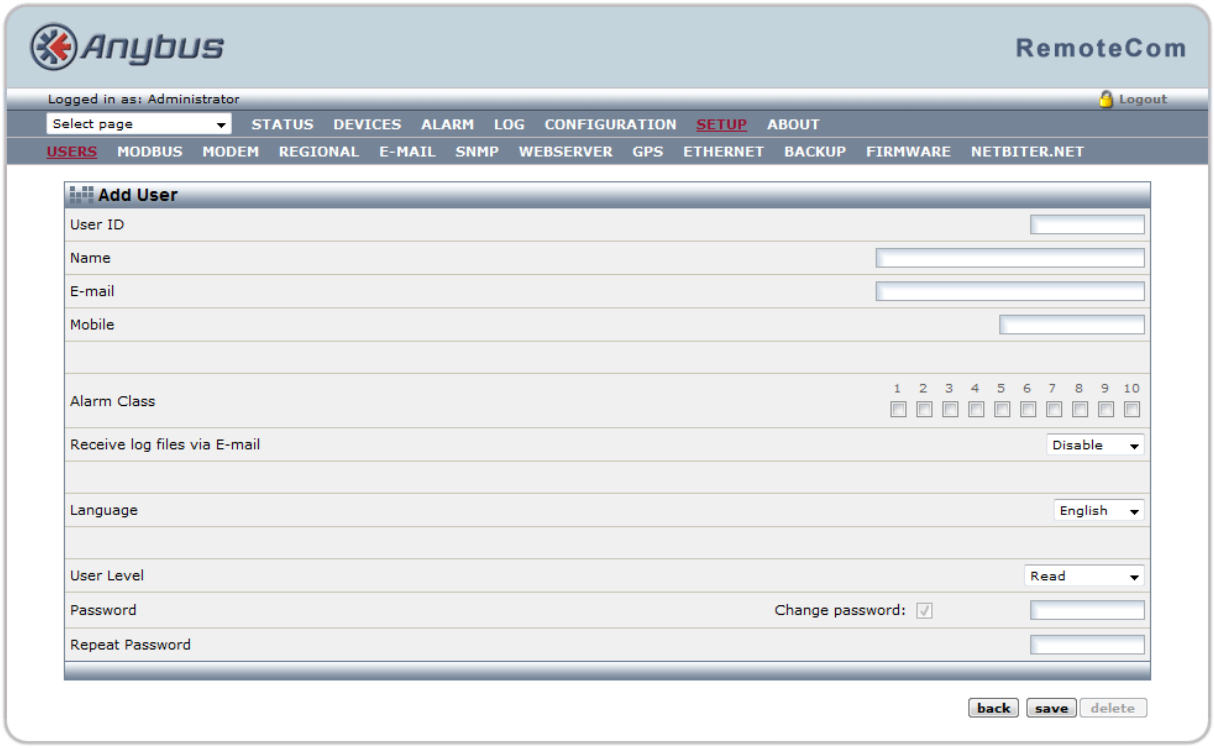
If you click on the Setup menu option, a sub menu will appear. Here you can do all necessary setup for things like user administration, modem settings and TCP/IP settings.

Anybus
RemoteCom
Logged in as: Administrator
Logout
Select page
STATUS DEVICES ALARM LOG CONFIGURATION SETUP ABOUT
USERS MODBUS MODEM REGIONAL E-MAIL SNMP WEBSERVER GPS ETHERNET BACKUP FIRMWARE NETBITER.NET

Users

If you press the "**Users**" link you will be transferred to the Users administration page. Here you can add, edit and remove users. To add a user, press the "**add user**" button, and to modify/remove a user click on the user you want to modify/remove.



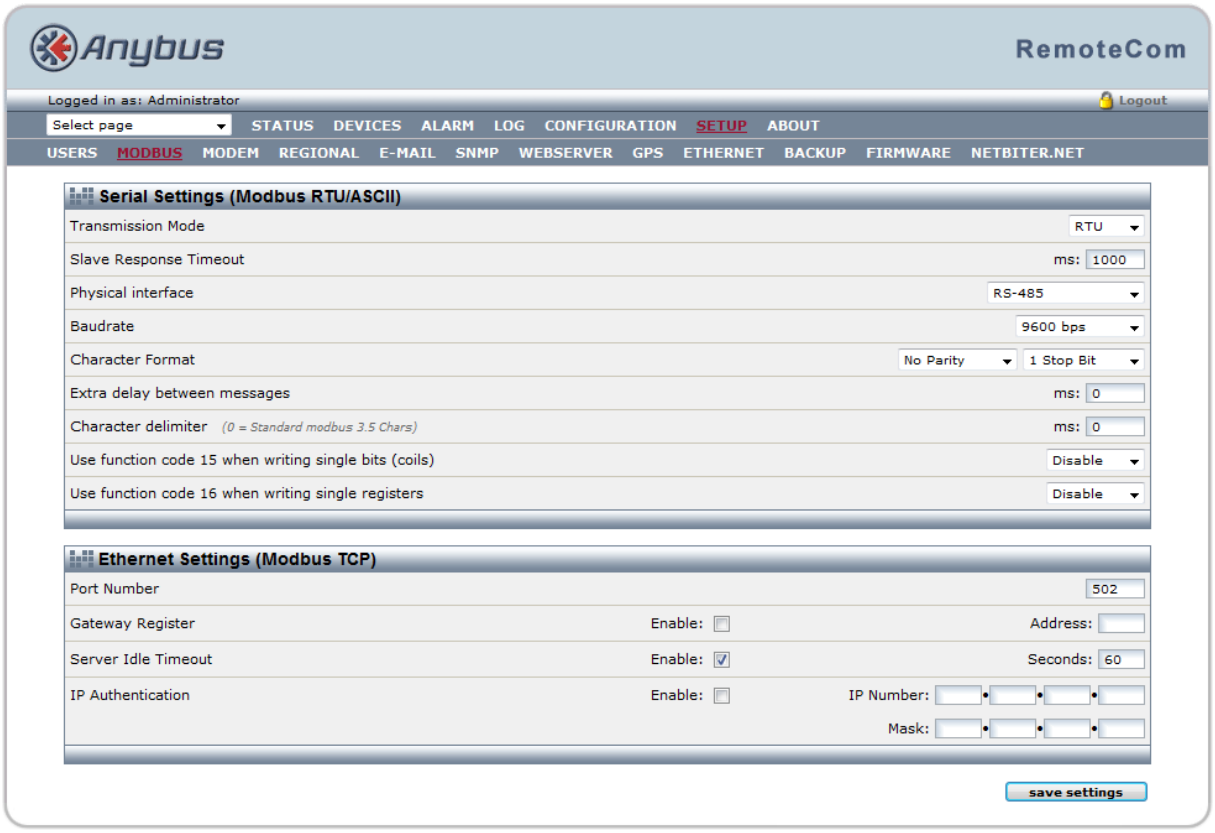


Field	Comments
User ID	Specify the User ID (used on the login screen)
Name	Full name of the user
E-mail	E-mail address to the user, needed if the user should be able to receive E-mail alarms.
Mobile	Mobile number to the user, needed if the user should be able to receive SMS alarms.
Alarm Class	To configure a user as an alarm-recipient, enable one or more of “Alarm classes” (Class 1-10). It has to be set to get alarm mail or SMS for an alarm point with the corresponding alarm class set. Make sure that the alarm has the correct alarm class set when edit the alarm point, see Chapter 4 on page 4-8. The user will only receive alarms that match this selection.
Receive log files via E-mail	The “Receive log files via E-mail” option configures whether this user will receive logs via Email or not. See Configuration/Log (section Chapter 4 on page 4-10) for more details about this function.
Language	The language selection defines which language will be used for this user.
User Level	The user level defines what the user can do on the web-pages: Read — View pages but can’t do any configuration or modify Modbus registers. Write — Van view pages and modify Modbus registers, acknowledge alarms. Admin — Read, Write and also configure the module (template, devices, pages, alarms, log and bindings) Super Admin — Read, Write, Admin and setup module like users, modem, Modbus and network settings.

To add/edit users, you must be logged in as a user with Super admin access.

Modbus settings

If you press the Configuration/Modbus menu you will be presented with the following view:



Serial Settings (Modbus RTU/ASCII)

Field	Comments
Transmission mode	Selects Modbus RTU or Modbus ASCII
Slave Response Timeout	The time that the module will wait for a response from a slave, before a Serial timeout will occur. (Default 1000 ms)
Physical Interface	Select whether to use RS-485, RS-422 or RS-232 for Modbus communication.
Baudrate	Select the baudrate for Modbus communication (300 - 115200 bps)
Character Format	Select number of stop bits and if parity should be enabled (Odd, Even).
Extra delay between messages	Extra time to delay between Modbus messages (for devices with timing problems)
Character delimiter	Number of milliseconds between characters in the Modbus frame. Set to zero to use standard Modbus (3.5 characters)
Force function code 15 when writing single coil	If this option is Enabled, all writes to coils will be done with function code 15. (Useful if slaves don't support function code 05).
Force function code 16 when writing single register	If this option is Enabled, all writes to registers will be done with function code 16. (Useful if slaves don't support function code 06).

Ethernet Settings (Modbus TCP)

Field	Comments
Port number	Which port to use for Modbus TCP communication (502 default).
Gateway Registers	The address to the gateway internal registers (if enabled). See section Chapter 5 Internal Registers on page 5-4 for details about the internal registers.
Server Idle Timeout	This parameter gives the idle timeout in seconds for the Modbus/TCP connection. If the Gateway doesn't receive any Modbus/TCP query within this time the connection will be closed. (Default value is 60 seconds).
IP Authentication	This can be used to configure the IP-number that is allowed to connect to the Gateway.

It is of great importance to ensure at the time of the procedure of assigning Modbus device addresses, that there are not two devices with the same address. In such a case, an abnormal behavior of the whole serial bus can occur, the Master being then in the impossibility to communicate with all present slaves on the bus.

Internal Registers

If Gateway registers are enabled, queries sent to that address will not be forwarded to the Serial Modbus/RTU network; the Gateway will respond to these queries by itself.

See **Appendix B** for a list of the internal registers.

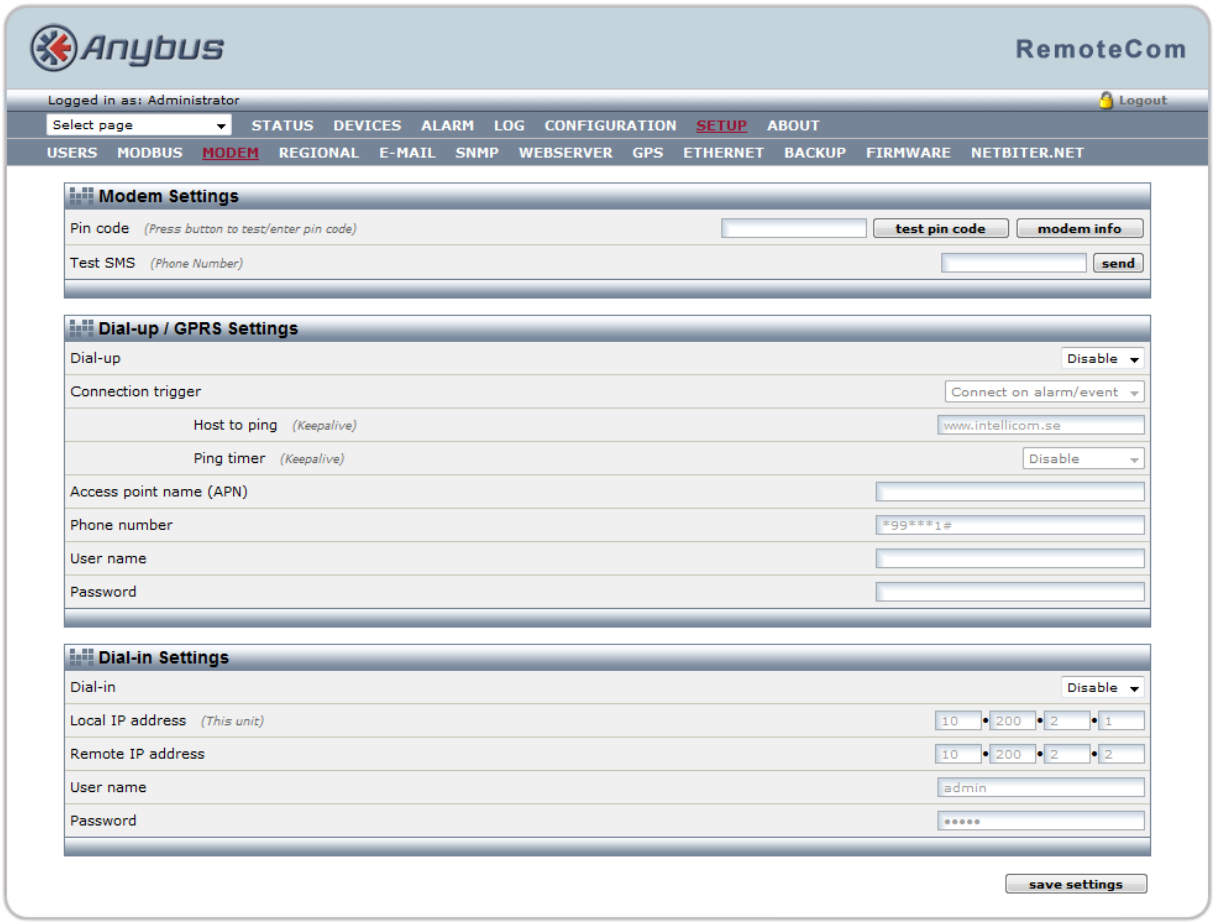
Valid Modbus commands for internal registers:

Command	Name
3	Read Holding Registers
6	Preset Single Register
16	Preset Multiple Registers

The internal registers are also available as an "internal template", i.e. the registers can be used on presentation pages and as alarms/log entries.

Modem settings

On this page you setup the modem.



Generic modem settings

Field	Comments
Pin code	Pin code for GSM modem.
Test SMS	Send a SMS to the specified number via GSM modem

Clicking on the "**modem info**" button will bring up a screen with some details about the modem (Signal strength etc).

Dial-up/GPRS settings

In this section you find configuration to allow the RemoteCom to connect to Internet using a modem.

Field	Comments
Dial-up	Enable/Disable modem Dial-up
Connection trigger	Specifies whether the RemoteCom should always be connected to Internet using the modem, or only connect when there is an alarm or event.
Host to ping	Address to the Host that the RemoteCom will ping when sending keep-alive messages for the GPRS connection.
Ping timer	Specifies the interval for the keep-alive messages. (Set value as high as possible to avoid unnecessary GPRS traffic).
Access Point Name (APN)	This is the gateway for all GPRS traffic. Contact your GSM/GPRS operator for information about this.
Phone number	Phone number to dial (e.g. to an Internet Service Provider, ISP).
User name	This is the user name your ISP has assigned to you.
Password	Password to log into the ISP network.

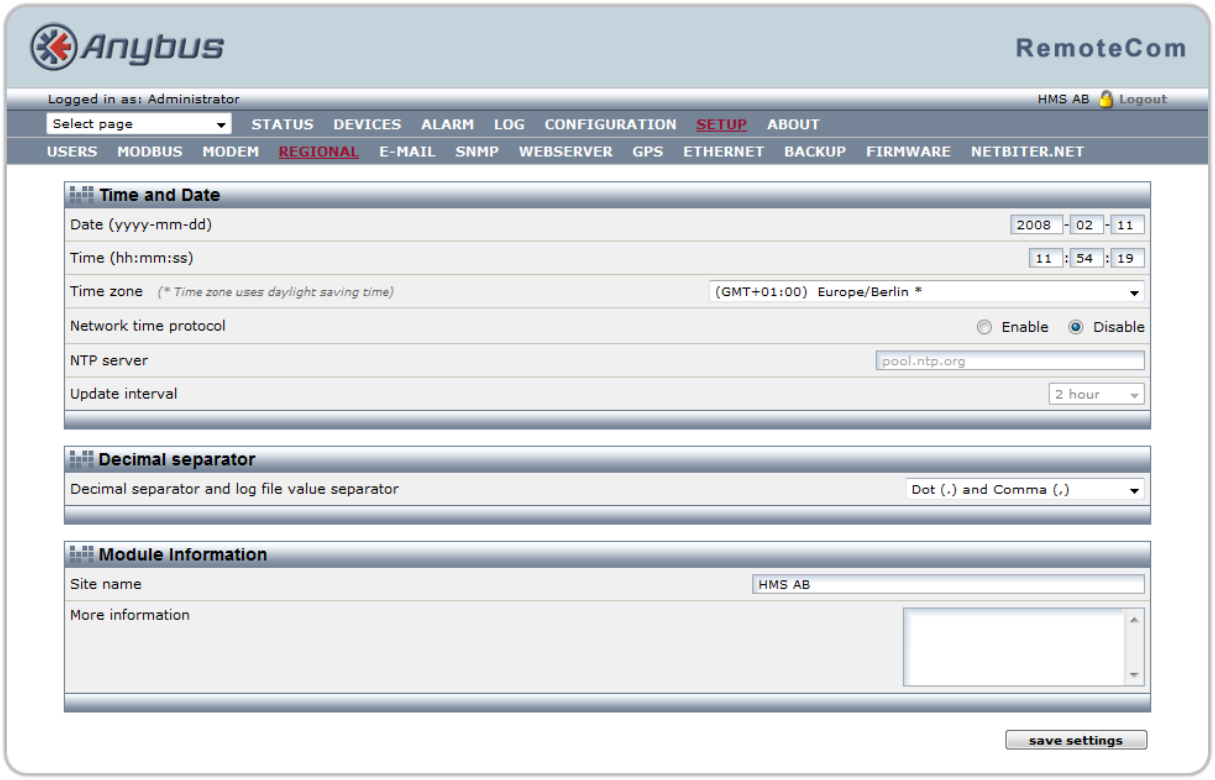
Dial-in settings

The dial-in functionality can be used when someone wants to view the web-pages in the RemoteCom over a modem-link.

Field	Comments
Dial-in	Enable/Disable modem Dial-in
Local IP-number	This is the IP-number of the RemoteCom, which the remote client will see when creating the PPP-connection.
Remote IP number	This is the IP-number that will be assigned to the remote client, when creating the PPP-connection.
User name	This is the login that the remote client will use when creating the PPP-connection.
Password	This is the password that the remote client will use when creating the PPP-connection.

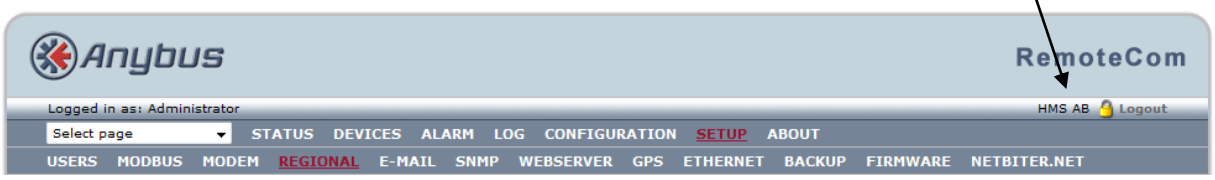
Regional

The Regional page contains configuration for time and date, generic module information and also configuration for how the log file list separator and decimal symbol should be represented.

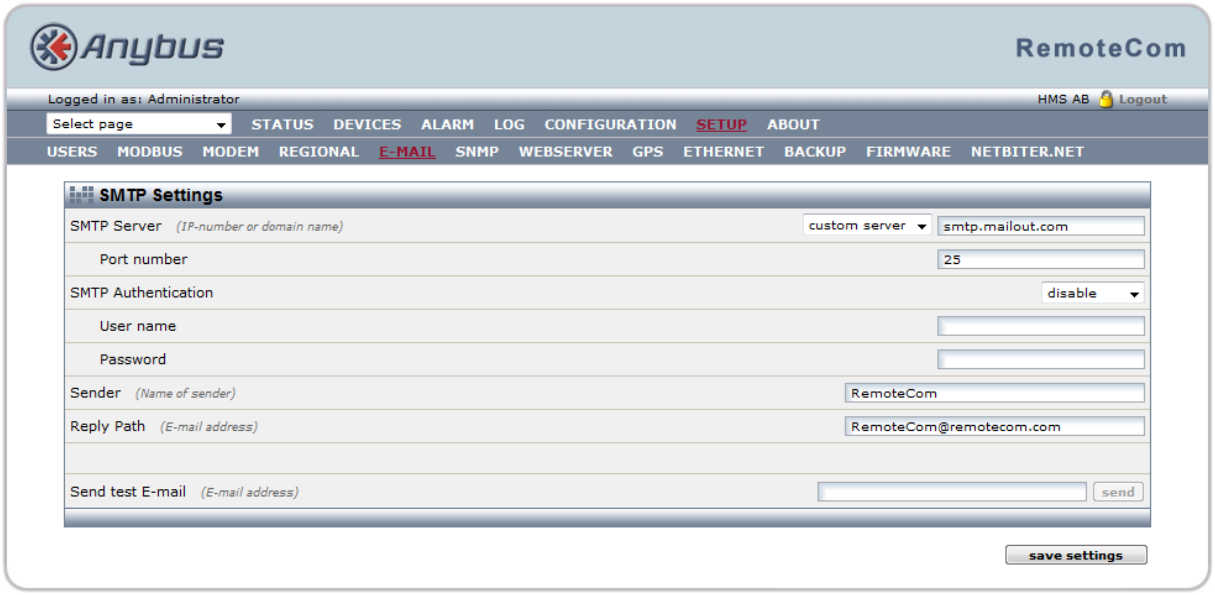


Time and date, Log file and Module information

Field	Comments
Date (yyyy-mm-dd)	Enter current date
Time (hh:mm:ss)	Enter current time
Time zone	Select the time zone for your location.
Network time Protocol	Enable/Disable use of a NTP server.
NTP server	Enter the address to your NTP server or use the default server (pool.ntp.org)
Update interval	Select how often the NTP should synchronize the time.
Decimal separator and log file value separator	Dot(.) and Comma (,) or Comma (,) and Semicolon (;)
Site name	The "Location" string can be used to add information about where the module is located (address, building id etc.) This information will be viewed on all page-headers.
More information	Field that could be used to enter additional information about the installation.

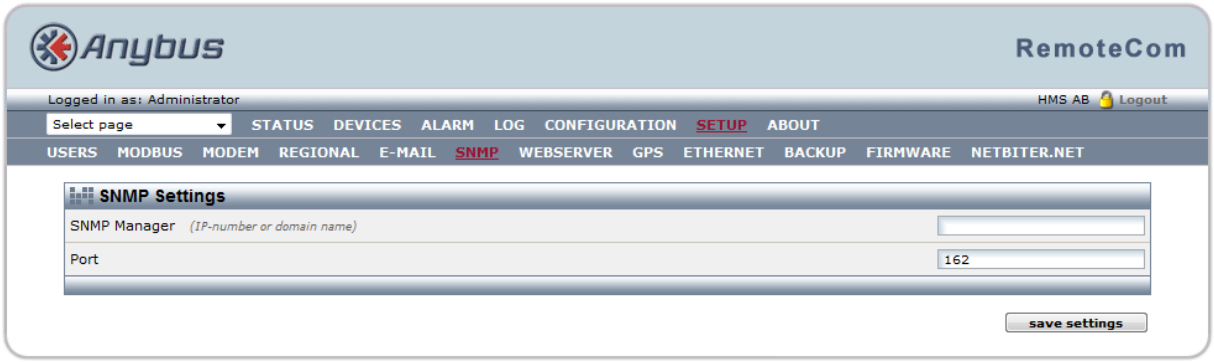


Email Setup



Field	Comments
SMTP Server	Custom server or NetBiter.net, when NetBiter.net is selected only Sender and Reply Path needs to be entered. IP-number or domain dame to the SMTP server that the module use when sending E-mails. If domain names is used make sure that you have entered a DNS in Network configuration.
Port number	The port that is used by the SMTP-server for incoming mail given by your Internet service provider. For custom servers this is set to port 25 as default.
SMTP Authentication	Select the authentication method to use: disable, plain, login or cram-MD5 disable — The SMTP server doesn't need authentication. plain — a simple non-encrypted method supported by most SMTP servers. login — a simple non-encrypted method supported by most SMTP servers. cram-md5 — a more secure login method where the user name and password is encrypted. (This method is not supported by all SMTP servers).
User name	The username to use during authentication.
Password	The password to use during authentication.
Sender	What will appear in the 'From:' field in the alarm mail. Example 'RemoteCom'
Reply path	If you reply to an alarm mail, this is the address that will be used to send the reply to.
Send test E-mail	Enter a valid e-mail address and press send to send a test E-mail

SNMP Setup



The SNMP Setup page contains configuration to be able to send SNMP traps.

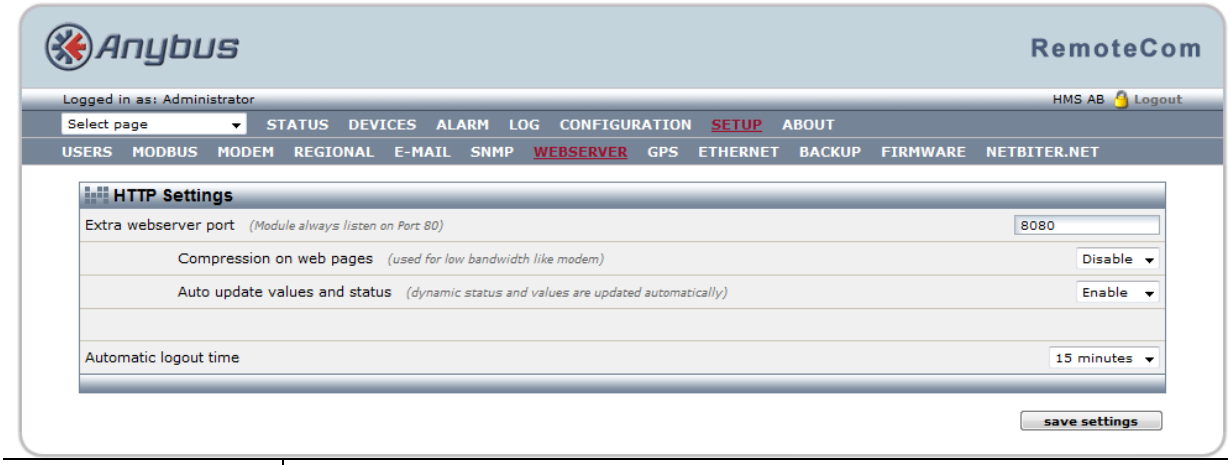
Field	Comments
SNMP Manager	The SNMP manager to which SNMP traps should be sent
Port	The port number on the SNMP manager to which traps should be sent

If SNMP is activated for alarms, see section Chapter 4 on page 4-7, all alarms will be sent by using SNMP.

There is a MIB-file for Anybus RemoteCom that can be downloaded from www.anybus.com

Web-server Setup

The Web server Setup page contains a configuration to change the port number of the internal web-server in the RemoteCom and also enable/disable the low bandwidth pages.


Anybus
RemoteCom
Logged in as: Administrator
HMS AB
Logout
Select page
STATUS DEVICES ALARM LOG CONFIGURATION SETUP ABOUT
USERS MODBUS MODEM REGIONAL E-MAIL SNMP WEBSERVER GPS ETHERNET BACKUP FIRMWARE NETBITER.NET
HTTP Settings
Extra webserver port (Module always listen on Port 80)
8080
Compression on web pages (used for low bandwidth like modem)
Disable
Auto update values and status (dynamic status and values are updated automatically)
Enable
Automatic logout time
15 minutes
save settings

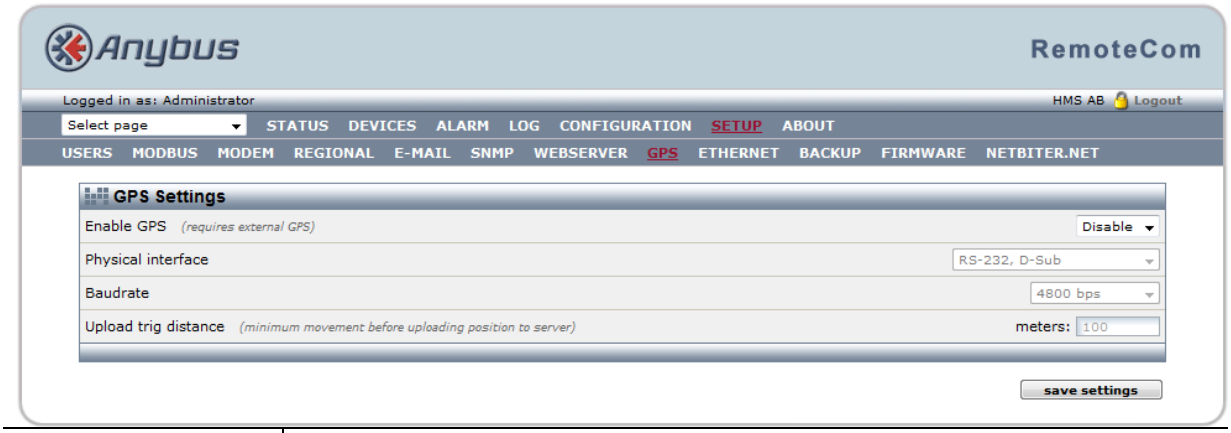
Field	Comments
Extra webserver port	To connect to the Extra webserver port the URL should have a colon ':' followed by the new port number, i.e. http://10.10.10.30:8080 where 10.10.10.30 is the IP number or DNS address to the RemoteCom and :8080 the new port.
Compression on web pages	(Only used for the Extra webserver port) is used to improve the data transfer for low bandwidth connection, such as modem connection. The Anybus RemoteCom will check if the connecting web browser support compressed data transfers, and then compress the web-pages before sending them. When compression is used the workload of the RemoteCom will increase, and that is why this feature is not enabled by default. There is an option to 'disable' compression and the pages will be sent as normal web pages, which always is the case for the standard web server port 80. If it is set to 'force' web pages will always sent compressed regardless the support of the web browser. In some cases the information if the web browser supports compressed data will be altered in the network route, as with Microsoft ISA server default setting for controlling port 80. To ensure that compressed web pages are sent anyway the option 'force' is set. Most web-browsers supports compressed data.
Auto update values and status	(Only used for the Extra webserver port) to minimize the amount of data transferred over a connection with http compression. The data will be read only one time. To refresh values and status the refresh button at the upper left corner has to be clicked. If the web-browser reload button is used instead, unnecessary data-traffic will be generated.
Automatic logout time	Defines the time-interval before a user is logged out from the web-server.

Note: The webserver will always listen on default port 80.

Note: When using modem connection, compression on web pages will always be enabled and Auto update will always be disabled to improve response time, and the refresh button has to be clicked to update values and status.

GPS

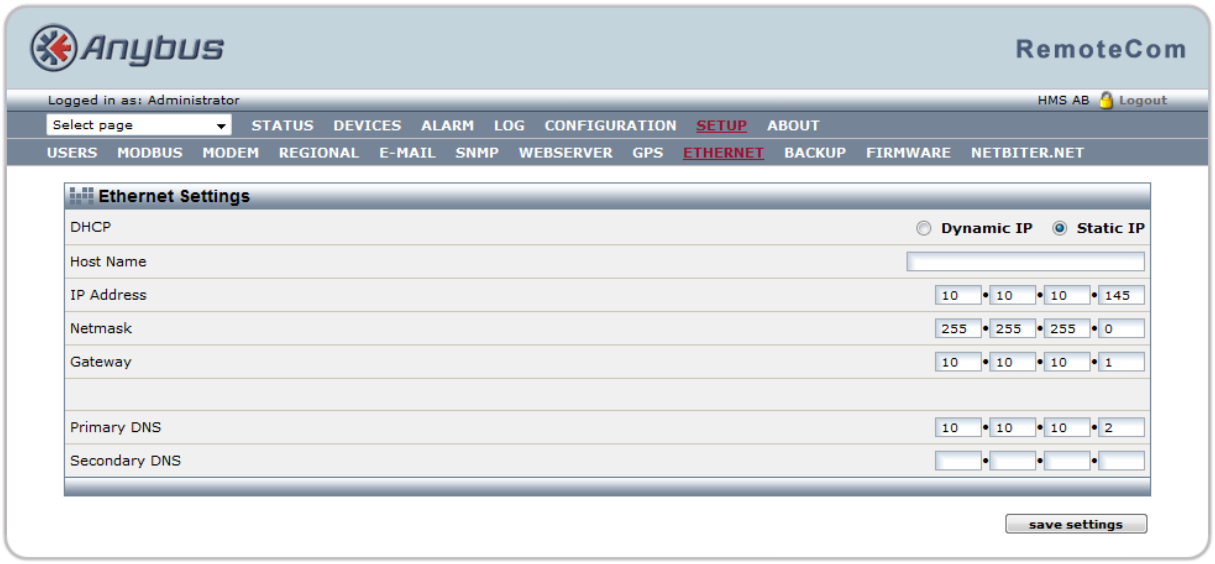
To keep track of moving objects there is support to connect a GPS to the RemoteCom.



Field	Comments
Enable GPS	-
Physical interface	RS-232 D-Sub or RS-232 screw terminal.
Baudrate	Enter the baudrate that the connected GPS communicates at.
Upload trig distance	Specify how many meters of movement before uploading the new position (to NetBiter.net)

Ethernet (TCP/IP) settings

If you press the Configuration/Ethernet link you will be presented with the following view:



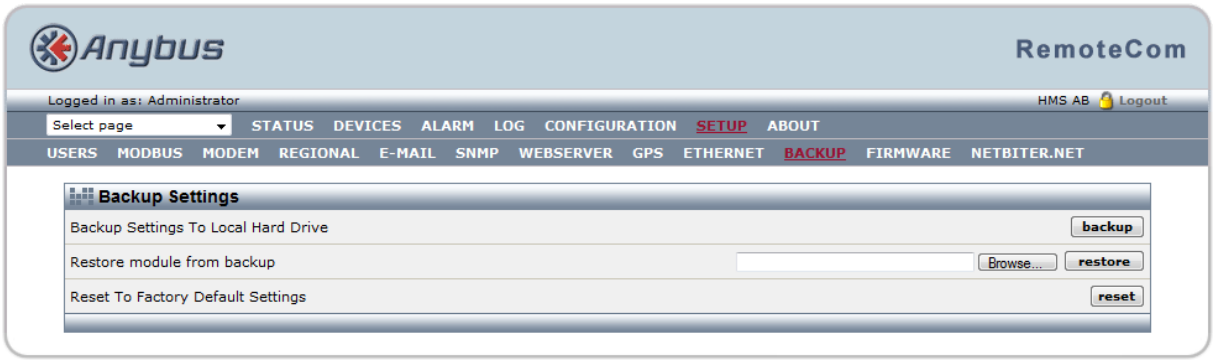
On this page you can view and change the TCP/IP network settings in the module. These settings are the same as the ones set by the Anybus IPconfig utility. To obtain the necessary information about IP address, Subnet mask etc. please contact your network administrator.

Field	Contents
DHCP	Setting: Meaning: On Use server-assisted IP settings Off Use the settings described below **Note:** Do not select the DHCP option unless you have a DHCP server available on the network
Hostname	Here you could enter a hostname for your device
IP Address	The IP address of the RemoteCom
Subnet mask	Mask network
Gateway	The default gateway in the network
Primary DNS	The primary Domain Name Server
Secondary DNS	The secondary Domain Name Server (optional)

(Press "Save Settings" to update your configuration)

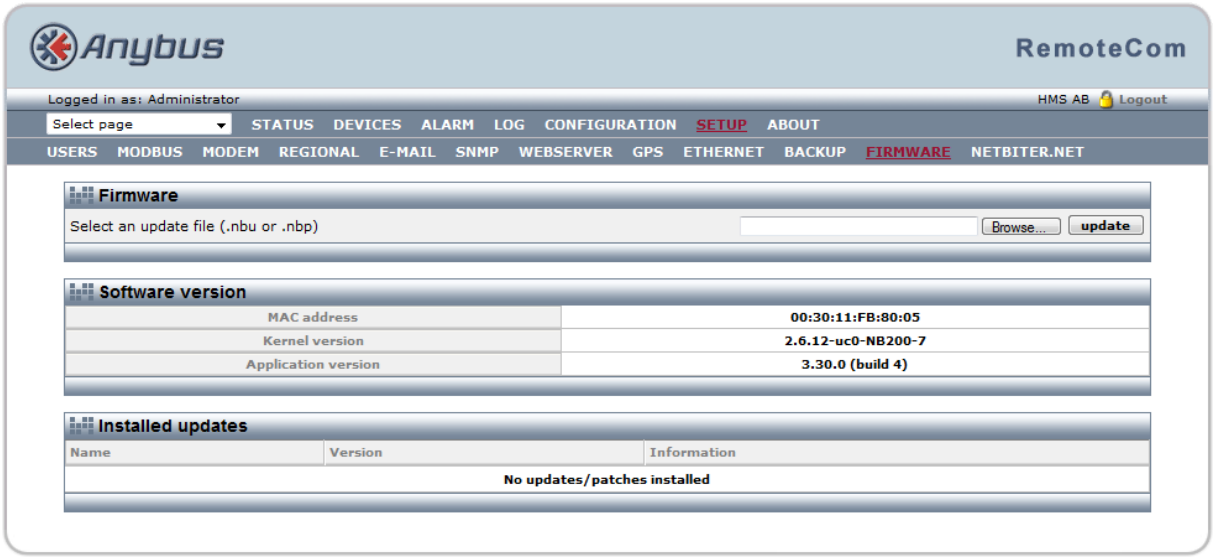
Backup

The backup functionality makes it possible to backup and restore configurations.



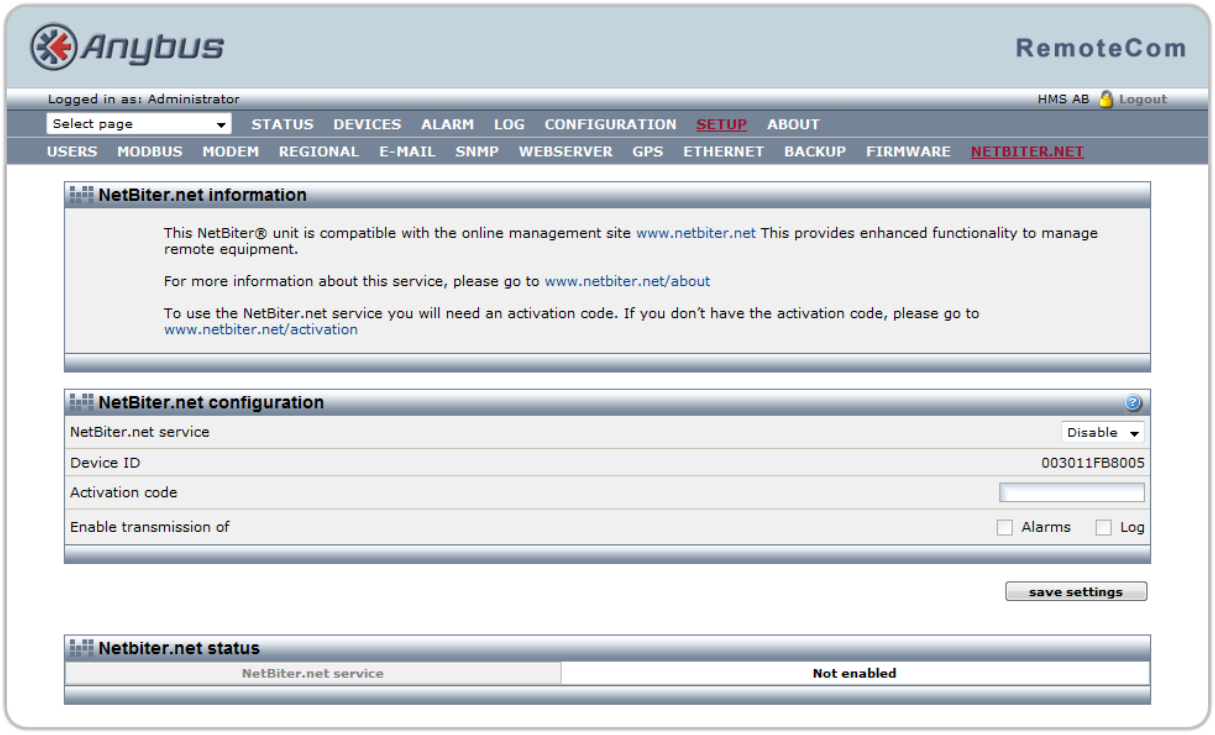
Field	Contents
Backup settings to Local Hard Drive	Press to generate a backup that you could store locally. All configurations in the Module except Ethernet settings will be in the backup.
Restore module from backup	To upload a backup to a module, press the Browse button and select an .nbb file, then press restore. After restoring the configuration, you will be asked to restart the module.
Reset to Factory Default Settings	To bring a module back to Factory default configuration, click the “reset” button.

Firmware



Field	Contents
Firmware	On the firmware page it's possible to download a new firmware image (.nbu file) or a patch file (.nbp).
Software verson	Version information for the module
MAC address	The MAC address for the module.
Kernel version	The version of the kernel in the module.
Filesystem version	The version of the filesystem in the module.
Installed Updates	If there are any updates installed on the system, the name, version and description of the update will show here

NetBiter.net


Anybus
RemoteCom
Logged in as: Administrator
HMS AB
Logout
Select page
STATUS DEVICES ALARM LOG CONFIGURATION SETUP ABOUT
USERS MODBUS MODEM REGIONAL E-MAIL SNMP WEBSERVER GPS ETHERNET BACKUP FIRMWARE NETBITER.NET
NetBiter.net information
This NetBiter® unit is compatible with the online management site www.netbiter.net This provides enhanced functionality to manage remote equipment.
For more information about this service, please go to www.netbiter.net/about
To use the NetBiter.net service you will need an activation code. If you don't have the activation code, please go to www.netbiter.net/activation
NetBiter.net configuration
NetBiter.net service
Disable
Device ID
003011FB8005
Activation code
Enable transmission of
Alarms
Log
save settings
Netbiter.net status
NetBiter.net service
Not enabled

NetBiter.net is a solution for remote management of devices attached to the RemoteCom. The Anybus RemoteCom is preconfigured to be able to use the NetBiter.net service.

Additional information about the NetBiter.net remote management service can be found at: http://www.netbiter.net

Field	Contents
NetBiter.net service	Enables the NetBiter.net remote management services.
Device ID	This Anybus RemoteCom device ID
Activation code	Code to activate the RemoteCom as a valid device at NetBiter.net
Enable transmission of	Enable alarms and or logs to be sent to NetBiter.net

When NetBiter.net is enabled, the SMTP server will automatically be set to NetBiter.net with correct user name and password.

APPENDIX A: Specifications

Ethernet connection

- 10Base-T or 100Base-TX (IEEE 802.3). RJ45 connector.

Serial interfaces

- RS-232 with full modem control (RTS,CTS,DCD,DTR,DSR,RI) 300-115.200bps, 9-pin DSUB connector
- RS-485, 300-115.200bps, screw connector.

Power Supply

- 9-28VDC (3W)

Temperature range

- Operating : - 40- 85 °C
- Storage : -40 – 85 °C

Humidity range

- 5-93% RH, non-condensing

Cover material

- Grey plastic, LEXAN 940, self-extinguishing acc. to UL94-V0

Mounting option

- DIN rail (EN 50022)

CE certification

- According to EN 61000-6-4:2001 and EN 61000-6-2:2005

APPENDIX B: Internal registers

Holding register	Name	Values	Options	Comment
1	Digital input 1 status	0 or 1		Read only
2	Digital input 2 status	0 or 1		Read only
3	Number Active Connections MB/TCP	0-10		Read only
4	Number Active Internal Connections	0-10		Read only
	Serial Status (Modbus/TCP)			See section (3.3)
5	Valid responses	0-65535		Can be cleared
6	Serial timeouts	0-65535		Can be cleared
7	CRC errors	0-65535		Can be cleared
8	Input Buffer overruns	0-65535		Can be cleared
9	Frame errors	0-65535		Can be cleared
10	Exception responses	0-65535		Can be cleared
	Serial Status (Buffered messages)			
11	Valid responses	0-65535		Can be cleared
12	Serial timeouts	0-65535		Can be cleared
13	CRC errors	0-65535		Can be cleared
14	Input Buffer overruns	0-65535		Can be cleared
15	Frame errors	0-65535		Can be cleared
16	Exception responses	0-65535		Can be cleared
	Serial Status (Internal requests and Webpages)			
17	Valid responses	0-65535		Can be cleared
18	Serial timeouts	0-65535		Can be cleared
19	CRC errors	0-65535		Can be cleared
20	Input Buffer overruns	0-65535		Can be cleared
21	Frame errors	0-65535		Can be cleared
22	Exception responses	0-65535		Can be cleared
	Configuration Registers			
23	Modbus/TCP Port	1-65535		Default port number is 502
24	Gateway Modbus address	(-1)-255		
		-1	Disabled	Default
		0 - 255	Enabled	
25	Modbus/TCP idle timeout	0-65535 (seconds)		Default 60 seconds
		0	Disabled	
		1 - 65525	Enabled	

Holding register	Name	Values	Options	Comment
26	Baudrate			
		2400	2400 bps.	
		4800	4800 bps.	
		9600	9600 bps.	Default value
		19200	19200 bps.	
		38400	38400 bps.	
		57600	57600 bps.	
		115200	115200 bps.	
27	Parity	0-2		
		0	No parity	Default
		1	Even parity	
		2	Odd parity	
28	Number of Stop bits	1-2		Default 1 stop bit
29	Slave timeout time	25-65535 (milliseconds)		Default 1000 ms.
30	Physical interface	0-2		
		0	EIA-485 (RJ12)	Default
		1	EIA-232 (DSUB)	
		2	EIA-232 (RJ12)	
	Authentication			
31	Valid IP address 1	0-255		First byte of IP address
		0	Disabled	IP address auth disabled
		1-255	Enabled	
32	Valid IP address 2	0-255	Enabled	Second byte of IP address
33	Valid IP address 3	0-255	Enabled	Third byte of IP address
34	Valid IP address 4	0-255	Enabled	Fourth byte of IP address
35	Mask for Valid IP address 1	0-255	Enabled	First byte of mask
36	Mask for Valid IP address 2	0-255	Enabled	Second byte of mask
37	Mask for Valid IP address 3	0-255	Enabled	Third byte of mask
38	Mask for Valid IP address 4	0-255	Enabled	Fourth byte of mask

APPENDIX C: SNMP

If SNMP Alarms is enabled, see page 4-7, all alarms will be sent as SNMP traps to the host specified on the SNMP page, see section Chapter 5 on page 5-9.

The OID is sent in the following format in numbers:

.1.3.6.1.4.1.23312.1.1.2 [IP address][event]

.1.3.6.1.4.1.23312.1.1.[trap_id][trap_data]

where.

23312 is Intellicom enterprise ID

1.1 is products Anybus RemoteCom

and where event:

1 = Alarm set

2 = Alarm cleared

A trap id is divided into five messages with following trap data:

#1	Alarm ID
#2	Alarm description
#3	Class ID (1-10)
#4	Class description
#5	Alarm severity,

where

0 = indeterminate

1 = critical

2 = major

3 = minor

4 = warning

5 = cleared

See the pictures for example of SNMP trap sent an alarm to warning of high temperature from a RemoteCom.

To try out the SNMP functionality the software Trap Receiver could be used. This program can be found at http://www.trapreceiver.com. Please, check the license for the software. It could be used to examine a trap sent to a PC to better understand the SNMP functionality of the Anybus RemoteCom.